Network Management Card & Modbus/Jbus

66123 User Manual

Network Management Teleservice Card

66124 User Manual

For Galaxy 7000 UPS and SSC unit

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1 MGE Galaxy 7000 Network Management card presentation

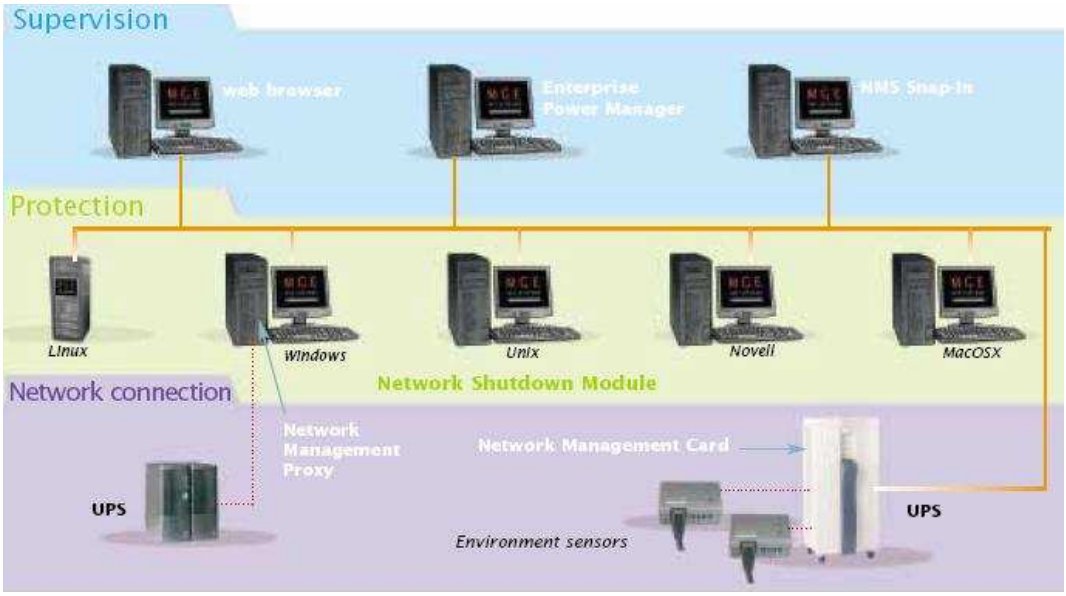
MGE Galaxy 7000 Network Solution:
provides information on events concerning the supply of power to the computers connected to your computer network,
carries out automatic shutdown of computer systems and monitors all the UPSs connected to the network.

Network Management Cards acquire information on the operation status of the UPS systems and provide monitoring of these systems by means of an ETHERNET network from any SNMP administration station or Web browser.

They also supply alarms to the “MGE Network Shutdown Modules” to trigger shutdown or other automatic actions for protected servers.

Network Management Cards are compatible with:
the "MGE Enterprise Power Management" supervision.
The “InfraStruXure Central” unit

As illustrated in the picture below, MGE Network Solution provides these 3 main functions:
supervision of the UPSs over the Network,
protection of the computers,
connexion of the UPS to the Network.



1.1 Connecting the UPS to the Ethernet network

This function can be performed through the network Cards inserted in the UPS (Network Management Card).

The Network Management Card:
manages communication with the UPS (as well as local protection of the machine on which Proxy is installed),
periodically accesses the information concerning the UPS,
makes this information available to the connected applications (Network Shutdown Modules, Web Browser, Network Management Systems, Enterprise Power Manager), ISX Central, Bulding Management System,
sends notifications on certain events

Operation may be in standard secure mode (the default mode) or in SSL secure mode (Secure Socket Layer SSL).

1.2 Protection of the computers / servers

This function is performed by the Network Shutdown Module installed on each of the servers to be protected.
Note that the Shutdown Module is available on several Operating Systems.

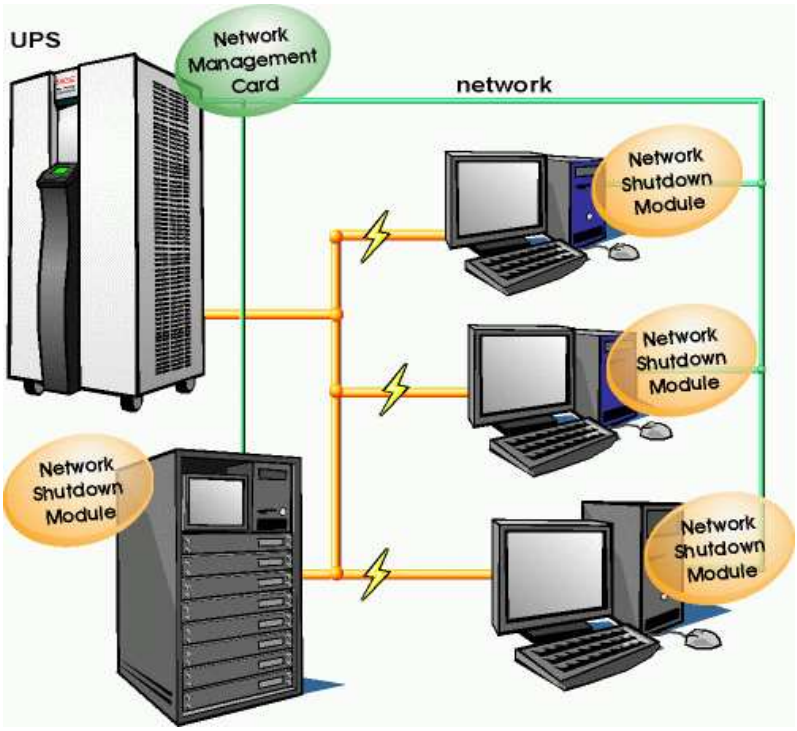
The Network Shutdown Module:

Continuously waits for information from the Network Management Card connected to the UPS.
Warns administrators and users if AC power fails and proceeds with graceful system shutdown before the end of battery backup power is reached.

1.3 Supervision of the UPSs over the network

Depending on your needs, you can either use:

Your Internet browser to monitor each UPS, as Management Card includes a Web server.
Your company's standard Network Management System (HP-Openview, CA Unicenter, HP Insight Manager, IBM Tivoli Netview). To simplify integration of MGE Galaxy 7000 UPSs, you can use one of the Network Management System Kits for MGE devices. These kits are available on the Management Pac 2 CD-ROM. (ref 66923)
The MGE supervisor "Enterprise Power Manager"



Set up the Network Management Card (see user manual).
Install and configure the Network Shutdown Module on all machines that are to be protected by the UPS.

The software components for each platform and the user manuals are on the Solution-Pac-2 CD or are available for download on the **www.mgeups.com** Web site, in the "**Download**" section.

1.4 Direct sending of E-mail

When a UPS event occurs, the Network Management Card can directly notify up to 4 intranet or extranet addresses by e-mail (see E-mail Notification and E-mail message settings)

1.5 Sending text messages (SMS)

The card offers the possibility of redirecting UPS alarms to an e-mail server. The format of these e-mails is compatible with mobile telephone e-mail/SMS transfer systems proposed by ISPs. The format to be used depends on the service provider. For example, sms.0660256585@votre-login.activmail.net (text messages).

1.6 Compatibility with the Network Management Systems (NMS) – Trap sending

The Network Management Cards are compatible with the major Network Management Systems (IBM Tivoli, CA Unicenter, HP Insight Manager). The Management-Pac 2 offering includes the necessary SNMP plug-ins to allow an easy integration in the NMS. Events are notified by SNMP trap.

1.7 Environment Sensor (option)

The **Environment Sensor** (66846) solution comprises a box to be connected to the Card Settings port of the Network Management Cards. Environment Sensor enables measurement of temperature and humidity around the UPS, consideration of external alarms via 2 dry contacts and notification of alarms according to pre-programmed thresholds. (see **Environmen Status** and **Environment Configuration**)

1.8 Modbus/Jbus for INMC 66123

The Modbus/Jbus hexadecimal (MODBUS RTU) communication protocol is used in slave mode. The system provides a communication channel with an RS485 or RS232 interface.

1.9 Teleservice for NMTC 66124

The Teleservice card allow the UPS Remote Monitoring feature from the APC by Schneider TLS Center.
This feature manages remotely UPS alarms, UPS diagnostic, UPS Monitroing and Monthly Reporting.

2 Technical data

2.1 Hardware characteristics

Dimensions

Dimensions (L x l x H)	132 x 66 x 42 mm
Weight (gr)	70 g.
Storage	
Storage temperature	-10℃ to 70℃
Ambient conditions	
Operating temperature	0℃ to 40℃
Ambient humidity	90% RH max without condensation
RoHS	100% compatible

2.2 EMC Compatibility

When correctly installed and used in accordance with the manufacturer's instructions, the Network Management Card complies with the following standards:

Safety for ATI: IEC/EN 60950-1 2005

EMC: EN 61000-6-2 (2005), EN 61000-6-3 (2006).

As per European directives:

Low voltage: 2006/95/EEC.

EMC: 2004/108/EEC.

2.3 Configuration

The user can configure the card with one of the following means:

Web browser

Local serial link (network parameters)

BOOTP/DHCP (network parameters)

2.4 Administration

Up to 35 workstations protected by Network Shutdown Modules - Central or local configuration.

Up to 5 browsers connected at the same time (3 in SSL).

- Minimum recommended browser versions: Internet Explorer 6.x / 7.0, Mozilla Firefox 1.5 / 2.0 / 3.0

E-mail sending configurable according to UPS alarms and transmission of a periodical report.

Automatic data and time adjustment via NTP server.

Protection by encrypted password.

Protection by secure SSL connection.

Saving of logs in the non-volatile memory.

Languages available:

INMC 66123 : English / French / Spanish / German / Italian

NMTC 66124 : English

On-line help in English available for each page.

Card firmware updated via the network

2.5 Network

Fast ETHERNET 10/100 Mbits compatibility with auto-negotiation on the RJ45 outlet.

The used ports are:

BootP	DHCP	UDP 68 , 67
HTML	TCP 80	
SSL	TCP 443	
NSM in connected mode	TCP 5000	
SMTP	25	
NTP	123	
SNMP V1	161	
TRAP SNMP	162	

2.6 Environment sensor

Temperature measurement from 0 to 70℃ with +/- 1℃ accuracy

Measurement of humidity from 0 to 100% with +/- 6% accuracy

Min / max time-stamped function for temperature and humidity

Choice of temperature readings in Celsius or Fahrenheit

High and low thresholds, hysteresis and offset adjustable via Web interface

Possibility of notification of status changes by e-mail, SMS or SNMP trap

Position detection of 2 dry contacts (maximum sensor/contact distance: 20 m)

Name and status of each configurable contact

Recording of events and measurements in the card log

Possibility of shutting down the installation in the event of a threshold being exceeded or on opening / closure of a dry contact

Connection to the card with straight CAT5 RJ45 network cables (maximum card/sensor distance: 20 m)

Hot installation

2.7 MIB (Management Information Base)

Compatible with MIB MGE V1.8 adapted for Galaxy 7000.
The list of objects managed can be found in the chapter 8.2.

2.8 Modbus/Jbus for INMC 66123

The Modbus/Jbus hexadecimal (MODBUS RTU) communication protocol is used in slave mode. The system provides a communication channel with an RS485 or RS232 interface.

Note:
2 wires or 4 wires RS485 link are available.

Warning:
RS232 and RS485 communication ports cannot be used together.
JBUS/MODBUS communication is operational 2 minutes after the startup of the card.

The Modbus Register map is presented in chapter 7.4.

2.9 Teleservice for NMTC 66124

The Teleservice card allow the UPS Remote Monitoring feature from the APC by Schneider TLS Center.
This feature manages remotely UPS alarms, UPS diagnsoitc, UPS Monitroing and Montly Reporting.

See chapter 8.

2.10 Default parameters

Function	Parameter	Default value	Possible value
Network	IP address	172.17.16.16	Network IP address
	Subnet mask	255.255.0.0	Network IP address
	Gateway Address	0.0.0.0	Network IP address
	BOOTP/DHCP	Enabled	Active / Deactivated
	Firmware Upload	Enabled	Active / Deactivated
	SMTP server	smtpserver	49 characters maximum
System	UPS Contact	Computer Room Manager	49 characters maximum
	UPS Location	Computer Room	31 characters maximum
	History log interval (sec.)	60	10 to 99999 sec.
	Environment log interval (sec.)	300	10 to 99999 sec.
	Default Language	English	English / French / Spanish / German / Italian
Manager table		empty	50 maximum
Access control	User name	MGEUPS	10 characters maximum
	Password	MGEUPS	10 characters maximum
	Community name read	public	49 characters maximum
	Trap port	161	Non configurable
Date and time	Date and time adjustment	Manual adjustment	Manual adjustment
Serial link	Speed	9600 baud	Non configurable
	Data bits	8	Non configurable
	Stop bits	1	Non configurable
	Parity	without	Non configurable
	Flow control	without	Non configurable
Modbus/jbus			
JBUS/MODBUS communication	- Baud rate	- 9600 bauds	- 1200, 2400, 4800, 9600
	- Parity	- without parity	- Without parity, even parity
	- Slave number	- Slave nr 1	- 1 to FF (hexadecimal)
RS232 link	- Link connection in transmit data (Tx) or receive data (Rx)	- Rx on pin 1 - Tx on pin 3	- Rx on pin 1 - Tx on pin 3
RS485 link	- Termination	- No termination	- With or without (2 or 4 wires)
Teleservice	- TLS settings via RS232 Menu	- TLS for 1 UPS and Sensor feature available	TLS up to 9 UPS (1UPS/NMTC+ 9 UPS/INMC)

3 Installation Network Management Card & Modbus/Jbus (INMC 66123)

3.1 Unpacking and check on contents

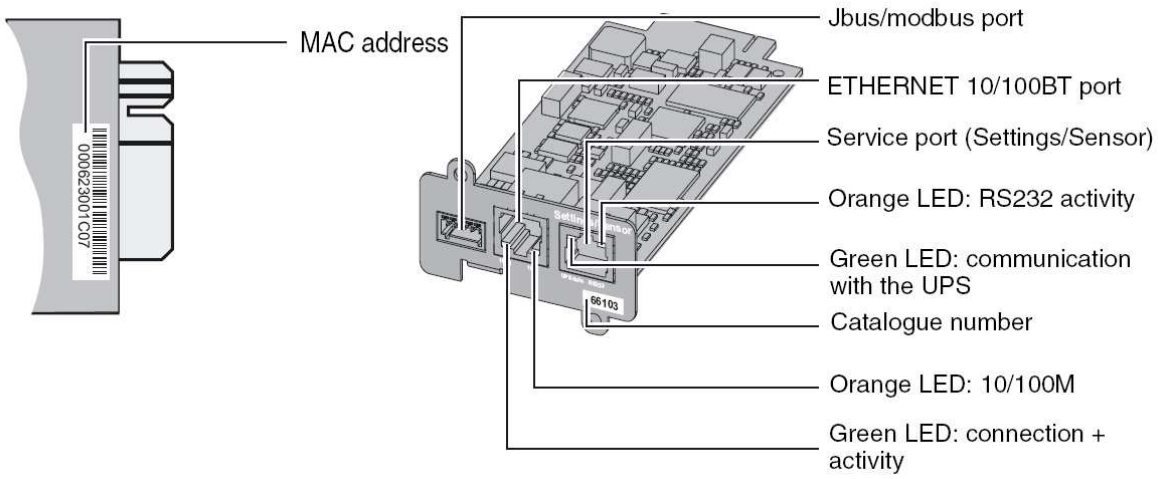
The installation kit contents:

A Network Management Card & Modbus/Jbus (66123)

A serial communication cable for configuration (3402226700)

Installation manual (34022308)

3.2 Indications



Ethernet port

LED	Colour	Activity	Description
ACT	Green	◗ Off ◗ On ◗ Flashing	◗ Card not connected to the network. ◗ Card connected to the network but without activity ◗ Port is active in receiving / transmission
100M	Orange	◗ Off ◗ On	◗ Port operating at 10Mbits/s. ◗ Port operating at 100Mbits/s.

Service port (Settings/Sensor)

LED	Colour	Activity	Description
UPS Data	Green	◗ Off ◗ On ◗ Flashing	◗ Card startup in progress. ◗ Communication with UPS in progress ◗ Normal operation. Communication with the UPS is operational
RS232	Orange	◗ Off ◗ On ◗ Flashing	◗ Configuration menu is active ◗ Normal operation. Configuration menu is deactived ◗ Communication with the Environment Sensor (option).

3.3 Installation in the UPS

The Network Management Card (66123) can be "hot" installed in the MGE Galaxy 7000 UPS or SSC unit.
Note the card's MAC address prior to insertion
Connect the ETHERNET cable
Insert and tighten the card's retaining screws
Wait 3 min.; the card is completely operational when the green UPS Data LED flashes continuously

3.4 Sensor installation (option)

The Environment sensor is available as an option on the Network Management Card. SKU number is 66846.
The sensor allows remote monitoring of the UPS's environment through regular measurements: temperature, humidity, status of two external contacts. It also enables notification of alarms (e-mail, trap SNMP) according to pre-programmed thresholds.
It is connected to the Service port (Settings/Sensor) directly on the Network Management Card with a standard Ethernet cable (20 meters maximum).
Recognition is automatic. Supervision and configuration are performed via a menu that can be accessed directly from the home page.

4 Installation Network Management Teleservice Card (NMTC 66124)

4.1 Unpacking and check on contents

The installation kit contents:

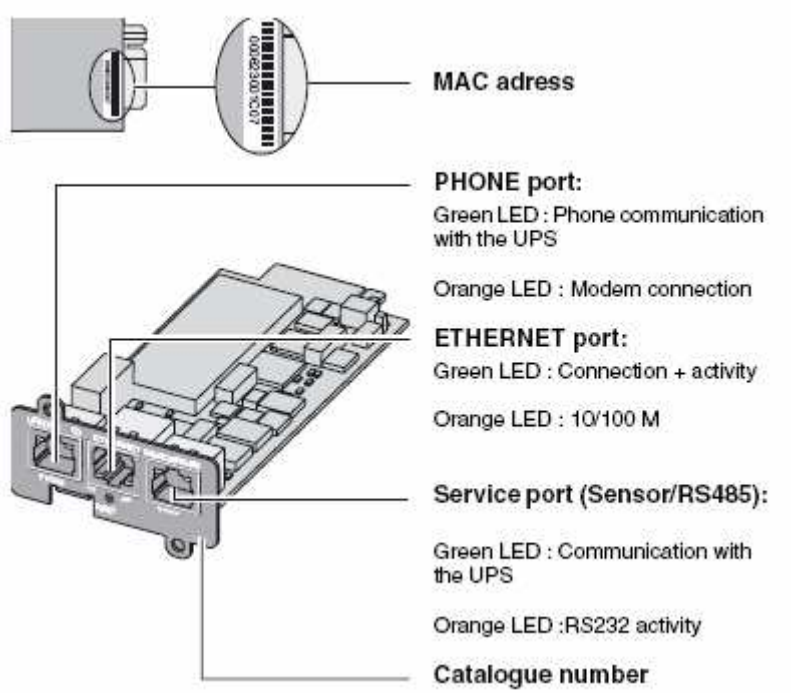
A Network Management Teleservice Card (66124)

A serial communication cable for configuration (3402226700)

One phone cable for teleservice (3402226800)

One installation manual (34003976EN)

4.2 Indications


MAC adress
PHONE port:
Green LED : Phone communication with the UPS
Orange LED : Modem connection
ETHERNET port:
Green LED : Connection + activity
Orange LED : 10/100 M
Service port (Sensor/RS485):
Green LED : Communication with the UPS
Orange LED :RS232 activity
Catalogue number

Ethernet port

LED	Colour	Activity	Description
ACT	Green	◗ Off ◗ On ◗ Flashing	◗ Card not connected to the network. ◗ Card connected to the network but without activity ◗ Port is active in receiving / transmission
100M	Orange	◗ Off ◗ On	◗ Port operating at 10Mbits/s. ◗ Port operating at 100Mbits/s.

Service port (Settings/Sensor)

LED	Colour	Activity	Description
UPS Data	Green	◗ Off ◗ On ◗ Flashing	◗ Card startup in progress. ◗ Communication with UPS in progress ◗ Normal operation. Communication with the UPS is operational
RS232	Orange	◗ Off ◗ On ◗ Flashing	◗ Configuration menu is active ◗ Normal operation. Configuration menu is deactived ◗ Communication with the Environment Sensor (option).

Phone port

LED	Colour	Activity	Description
UPS Data	Green	◗ Off ◗ On ◗ Flashing	◗ Card not connected to phone network ◗ Card connected to phone network, but no activity ◗ Port is sending/receiving
CD	Orange	◗ Off ◗ On ◗ Flashing	◗ Modem is not connected ◗ Modem is connected ◗ Modem is connecting

4.3 Installation in the UPS

The Network Management Teleservice Card (66124) can be "hot" installed in the MGE Galaxy 7000 UPS or SSC unit.
Note the card's MAC address prior to insertion
Connect the ETHERNET cable
Insert and tighten the card's retaining screws
Wait 3 min.; the card is completely operational when the green UPS Data LED flashes continuously

For Teleservice installation, the NMTC card must be installed in the SSC unit.

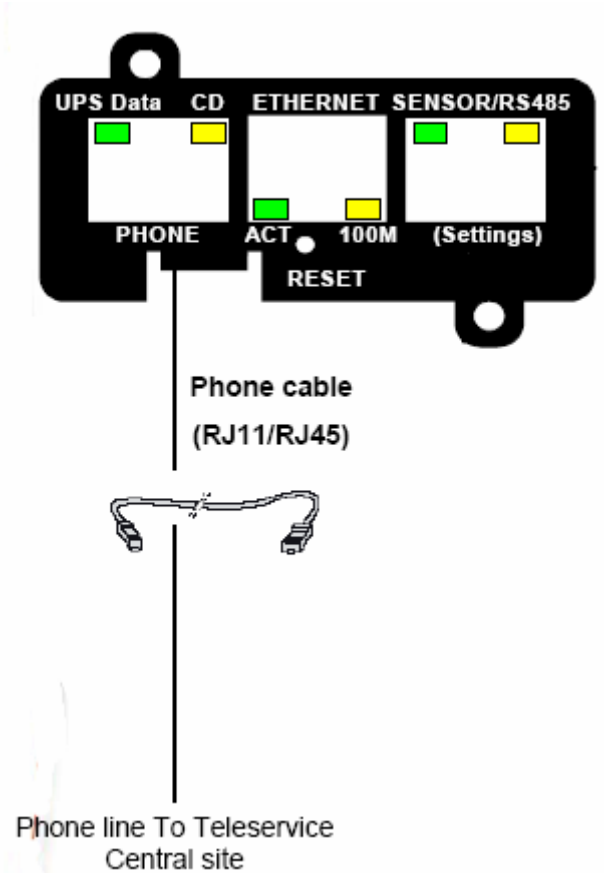
4.4 Sensor installation (option)

The Environment sensor is available as an option on the Network Management Card. SKU number is 66846.
The sensor allows remote monitoring of the UPS's environment through regular measurements: temperature, humidity, status of two external contacts. It also enables notification of alarms (e-mail, trap SNMP) according to pre-programmed thresholds.

It is connected to the Service port (Settings/Sensor) directly on the Network Management Card with a standard Ethernet cable (20 meters maximum).
Recognition is automatic. Supervision and configuration are performed via a menu that can be accessed directly from the home page.

4.5 Line Phone Port

Telephone connexion for the teleservice application.



5 Configuration

5.1 Configure IP parameters

Once the card has started:

Connect one end of the cable (3402226700) to the Service port.

If the environment sensor was previously connected, the card must be restarted in order to access the configuration menu.

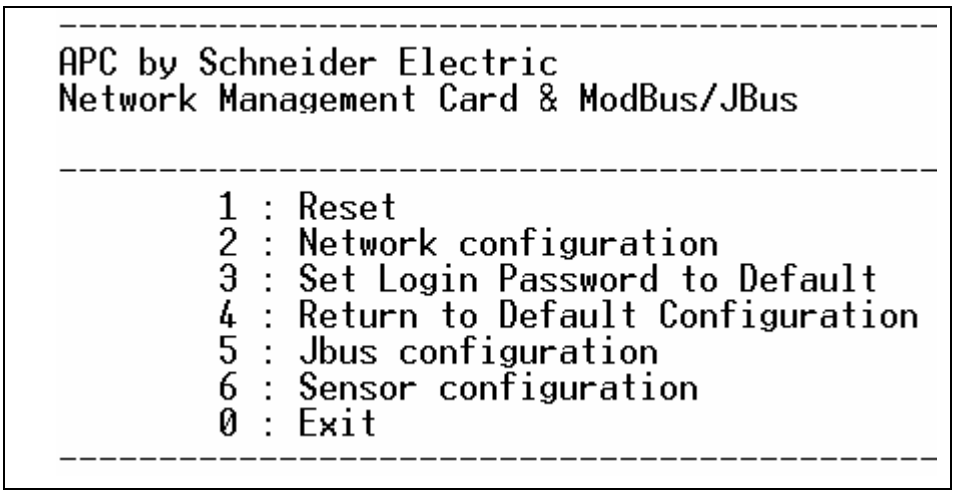
Connect the other end of the cable to the COM port (IOIOI) of a PC.

Launch a HyperTerminal™ type emulator with the following configuration:

NMTC	INMC
Speed: 38400	Speed: 9600
Data bits: 8	Data bits: 8 toto
Parity: none	Parity: none
Stop bits: 1	Stop bits: 1
Flow control: none	Flow control: none

"Locally reproduce the characters entered" option: deactivated.

Enter MGEUPS or mgeups. The main menu is displayed:


APC by Schneider Electric
Network Management Card & ModBus/JBus
1 : Reset
2 : Network configuration
3 : Set Login Password to Default
4 : Return to Default Configuration
5 : Jbus configuration
6 : Sensor configuration
0 : Exit

5.1.1 Your network is equipped with a DHCP server

The card is configured by default with this service activated.

The card automatically collects IP parameters.

To know the IP parameters, type 2, the next menu is displayed:

```
--------------------------------------------------------------------------------
Network settings
--------------------------------------------------------------------------------
        1 : Read Network settings
        2 : Modify Network settings
        3 : Set Ethernet speed
        0 : Exit
--------------------------------------------------------------------------------
```

Then type 1. The menu is displayed:

```
Network configuration :
        MAC address : 00:06:23:00:1F:8F
        Mode : Static IP
        IP address : 172.17.21.94
        Subnet mask : 255.255.248.0
        Gateway : 172.17.17.1
```

Note the IP address.

To exit, enter 0 then 0. The card is operational.

Note: As long as the card is not connected to the network, it continuously attempts to make connection. Once the connection has been established, the operational mode presented in the table above becomes effective.

5.1.2 Your network is not equipped with a DHCP server

In the main menu enter 2, then 2 again. The menu is displayed:

Follow the instructions and enter the static IP parameters.

At the end of the menu, wait for the "Done" message to be displayed indicating that the IP parameters have been saved.

```
-------------------------------------------------------------------------------
Network settings
-------------------------------------------------------------------------------
    1 : Read Network settings
    2 : Modify Network settings
    3 : Set Ethernet speed
    0 : Exit
-------------------------------------------------------------------------------
For each of the following questions, you can press <Return> to select the value
shown in braces, or you can enter a new value.
Should this target obtain IP settings from the network?[N] N
Static IP address [172.17.21.94]? 172.17.21.21
Static IP address is 172.17.21.21
Subnet Mask IP address [255.255.248.0]? 255.255.255.0
Subnet Mask IP address is 255.255.255.0
Gateway address IP address [172.17.17.1]? 172.17.17.1
Gateway address IP address is 172.17.17.1
Wait during your new configuration is saved ...
Reset the card to take into account the new configuration.
```

Return to the main menu and enter 1 then 2.

The card restarts with the new IP parameters.

5.2 Test after configuration

To check that the Network Management Card is operational after installation and configuration.

From a station connected to the same subnet as the card, open a web browser and enter the IP address of the card in the address field.

6 Supervision and administration by browser

On a computer equipped with a Web browser (Internet Explorer, FireFox or Netscape recommended), enter the address initialised previously in the Installation chapter (e.g. http://172.17.16.16.)

The "UPS properties" home page is displayed.

6.1 Optimising the performance of your browser

To view status changes on the UPS in real time, the browser must be configured so that it automatically refreshes all the objects on the current page.

Example on IE 6 / IE 7: Tools / Internet Options / General / Parameters menu, tick Every time this page is visited and validate.

6.2 UPS

6.2.1 UPS properties page

This page is automatically refreshed every 10 seconds

From this page, access to the main UPS information is available thanks to the combo box (see screen copy below).

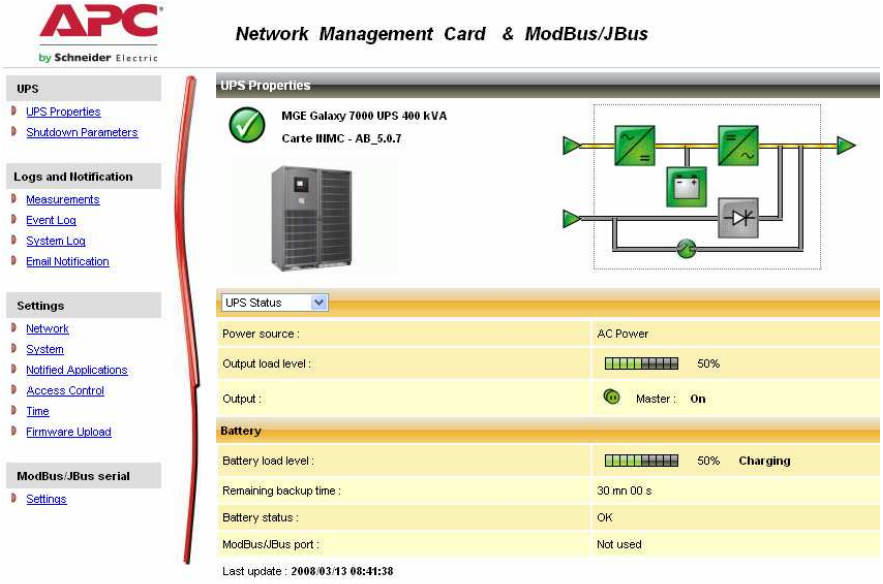
The different choices are the following ones:

“UPS Status”: (chosen by default) this page gives instant access to the essential information about your UPS.

“UPS Alarms”: to view the list of current alarms.

“About your UPS”: provides information on the UPS and the card, in particular, the model range and software version.

These different pages are detailed in the following chapters.



6.2.1.1 *"UPS" zone: general information on the UPS.*

Indication of the picture and generic name of the UPS range

Computer room: Customised name of your system.

You can change this name on the **"System"** page.

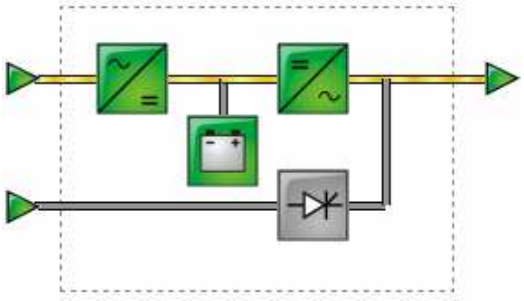
UPS status icon :

The various icons showing the status of the UPS are:

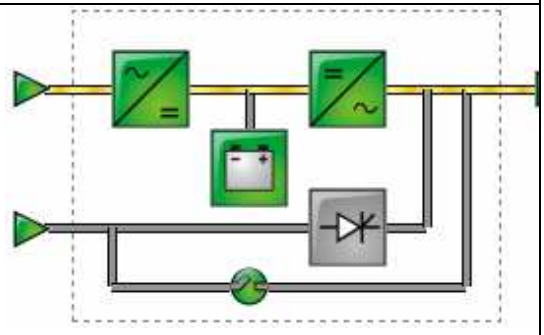
	Normal operation
	Alarm present. This icon links directly to the alarm page.
	Loss of communication with the UPS

Animated synoptic: An animated synoptic gives a global overview of the UPS current operating mode.

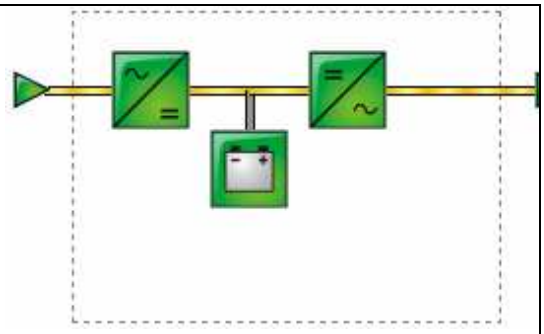
The synoptic drawing depends on the UPS topology. The different drawings are described in the table below.



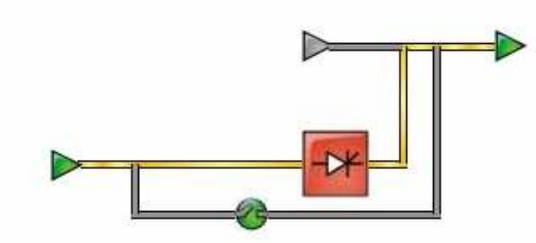
UPS with automatic bypass



UPS with automatic and manual bypass



UPS without automatic bypass



SSC Static Switch Cabinet

Note: In case of loss of communication with the UPS, all the elements of the synoptic are grey.

The various elements of the synoptic are the following ones:

AC Normal Input :

	In tolerances
	Out of tolerances

AC Normal Flow :

	AC to DC converter powered by AC Normal
	AC to DC converter not powered by AC Normal

AC to DC Converter:

	Powered
	Not powered
	Internal failure

Battery :

	Remaining capacity > 50%
	Remaining capacity < 50%
	Battery to be checked (battery test result)

Battery Output Flow :

	DC to AC converter powered by battery
	DC to AC converter not powered by battery

DC to AC Converter Input flow :

	Energy flow present
	No energy flow

DC to AC Converter :

	Powered
	Not powered
	Internal failure

DC to AC Converter Output :

	Energy flow present
	No energy flow

AC Bypass Input :

	In tolerances
	Out of tolerances

AC Automatic Bypass Flow :

	Energy flow present
	No energy flow

AC Automatic Bypass Status :

	Powered
	Not powered
	Internal failure

AC Manual Bypass Flow :

	Energy flow present
	No energy flow

AC Manual Bypass Status :

	Open
	Closed

AC Output Flow :

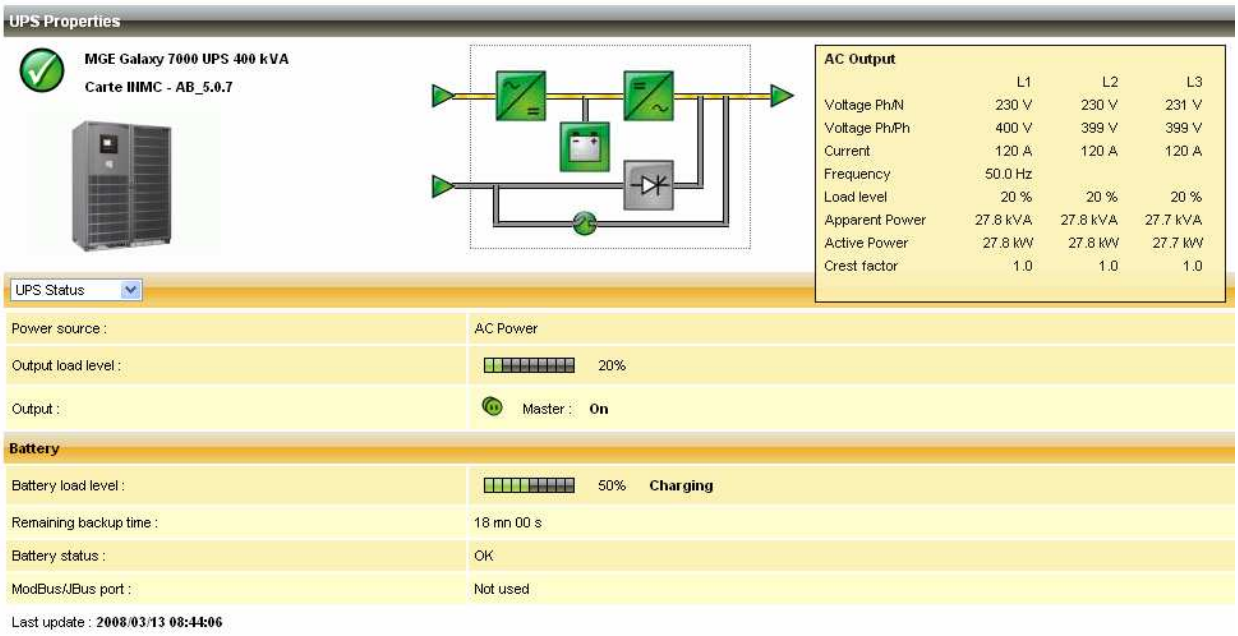
	Energy flow present
	No energy flow

AC Output :

	Load protected
	Load not protected

6.2.1.2 *"UPS measurements"*

Boxes showing measurements appear when synoptic elements are hovered by the pointer. See example below.


UPS Properties
MGE Galaxy 7000 UPS 400 kVA
Carte IIIMC - AB_5.0.7
AC Output
L1 L2 L3
Voltage Ph/N 230 V 230 V 231 V
Voltage Ph/Ph 400 V 399 V 399 V
Current 120 A 120 A 120 A
Frequency 50.0 Hz
Load level 20 % 20 % 20 %
Apparent Power 27.8 kVA 27.8 kVA 27.7 kVA
Active Power 27.8 kW 27.8 kW 27.7 kW
Crest factor 1.0 1.0 1.0
UPS Status
Power source : AC Power
Output load level : 20%
Output : Master : On
Battery
Battery load level : 50% Charging
Remaining backup time : 18 mn 00 s
Battery status : OK
ModBus/JBus port : Not used
Last update : 2008/03/13 08:44:06

These measurements are available for AC to DC converter, Battery, DC to AC converter and automatic bypass.
The measurements available in these boxes depend on the UPS range.

6.2.1.3 "UPS status" zone: Essential information

"***Active sources***": (available on parallel or modular UPS)

x UPS + y UPS redundant : x indicates the minimal number of UPS necessary to power the load,

y indicates the number of UPS in redundancy.

An alarm can be generated if the number of UPS in redundancy is less than a configurable threshold. See UPS modules section.

"***Power source***": indicates whether the power comes from the utility or from the UPS battery

"Output load level": indicates the power percentage used at UPS output

"Output" & "Master" indicate if the UPS output is powered

The various icons showing the status of the UPS outputs are:

	Output powered
	Output not powereded

Battery Information :

"***Battery load level***": battery charge level in percent

The information is completed with the two following labels:

"***Charging***" : if the utility power is present and the battery charge is in progress

"***Discharging***": if the UPS operates on battery.

"***Fault***": if the battery is faulty.

"***Remaining backup time***": Estimation of the battery's maximum backup time remaining before UPS shutdown

"***Battery status***": Result of the last automatic battery test carried out by the UPS

Possible values are:

– OK: the test was completed correctly

– NOK: the battery needs to be checked

– Deactivated: the automatic battery test is not validated on the UPS

6.2.1.4 *Viewing the alarms*

Click on "***Alarm Table***" scroll list to view the list of current alarms. The table of managed alarms is included in the **appendix**.

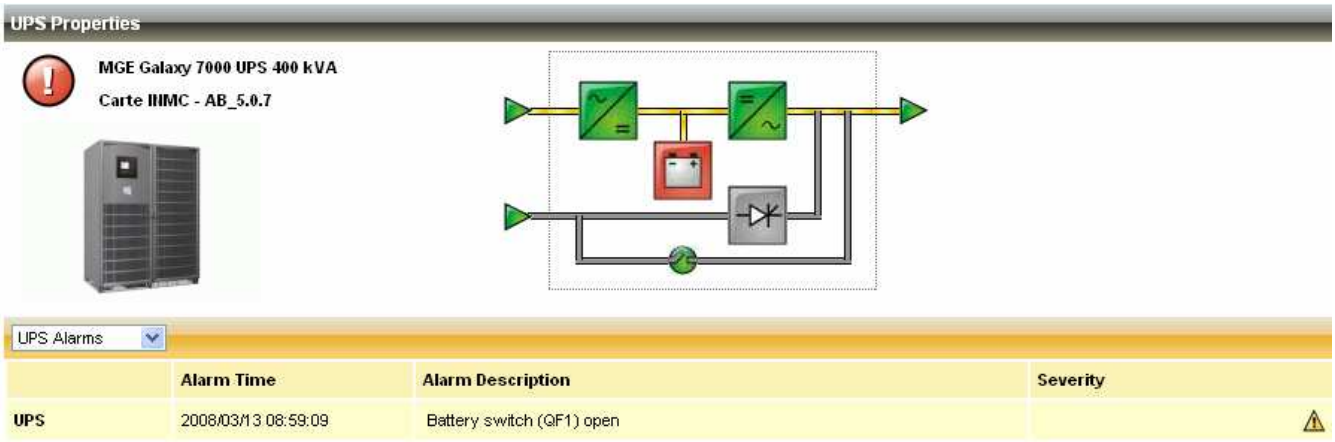
The level of the alarms appears like below:

Critical

Warning

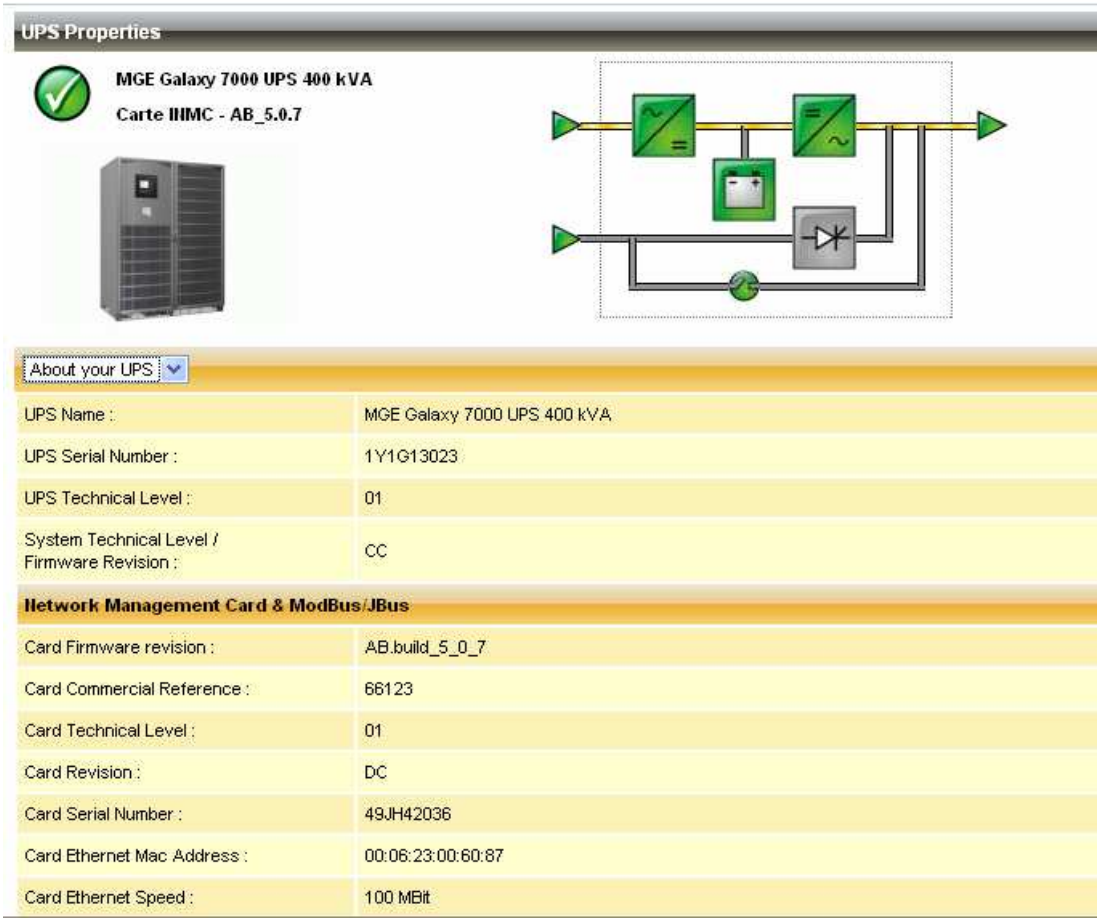
Unknown

Alarm table for standard UPS



6.2.1.5 *Viewing the "About your UPS" window*

Click on "***About your UPS***" scroll list to view the information about the UPS and the card.

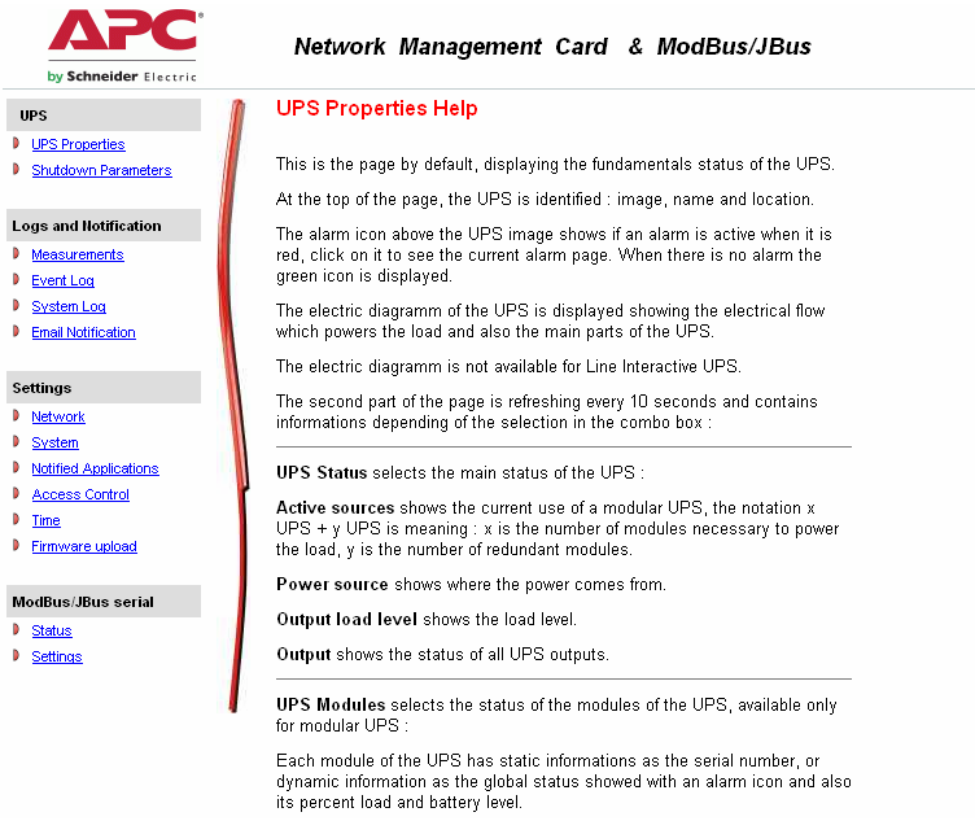

UPS Properties
MGE Galaxy 7000 UPS 400 kVA
Carte IIMC - AB_5.0.7
About your UPS
UPS Name : MGE Galaxy 7000 UPS 400 kVA
UPS Serial Number : 1Y1G13023
UPS Technical Level : 01
System Technical Level / Firmware Revision : CC
Network Management Card & ModBus/JBus
Card Firmware revision : AB.build_5_0_7
Card Commercial Reference : 66123
Card Technical Level : 01
Card Revision : DC
Card Serial Number : 49JH42036
Card Ethernet Mac Address : 00:06:23:00:60:87
Card Ethernet Speed : 100 MBit

Network Management Teleservice Card
by Schneider Electric
UPS
UPS Properties
Shutdown Parameters
Logs and Notification
Measurements
Event Log
System Log
Email Notification
Settings
Network
System
Notified Applications
Access Control
Time
Firmware Upload
UPS Properties
MGE Galaxy 7000 SSC 1200 kVA
Computer Room
UPS Status
Power source :
AC Power
Output load level :
50%
Output :
Master :
On
Last update : 1970/01/01 14:59:11

6.2.2 On-line help

On-line contextual help in English is available at the top of each page by clicking on the Help link, which is always located on the top right corner. The navigation menu of the on-line help is identical to that of the card's pages.

The Help page always opens a new window.


APC
by Schneider Electric
Network Management Card & ModBus/JBus
UPS
UPS Properties
Shutdown Parameters
Logs and Notification
Measurements
Event Log
System Log
Email Notification
Settings
Network
System
Notified Applications
Access Control
Time
Firmware upload
ModBus/JBus serial
Status
Settings
UPS Properties Help
This is the page by default, displaying the fundamentals status of the UPS.
At the top of the page, the UPS is identified : image, name and location.
The alarm icon above the UPS image shows if an alarm is active when it is red, click on it to see the current alarm page. When there is no alarm the green icon is displayed.
The electric diagramm of the UPS is displayed showing the electrical flow which powers the load and also the main parts of the UPS.
The electric diagramm is not available for Line Interactive UPS.
The second part of the page is refreshing every 10 seconds and contains informations depending of the selection in the combo box :
UPS Status selects the main status of the UPS :
Active sources shows the current use of a modular UPS, the notation x UPS + y UPS is meaning : x is the number of modules necessary to power the load, y is the number of redundant modules.
Power source shows where the power comes from.
Output load level shows the load level.
Output shows the status of all UPS outputs.
UPS Modules selects the status of the modules of the UPS, available only for modular UPS :
Each module of the UPS has static informations as the serial number, or dynamic information as the global status showed with an alarm icon and also its percent load and battery level.

6.2.3 Shutdown parameters

The menu Shutdown Parameters is not present with a UPS Static Switch Cabinet.

This page enables viewing and configuration of UPS operating parameters in battery mode and for power restoration.

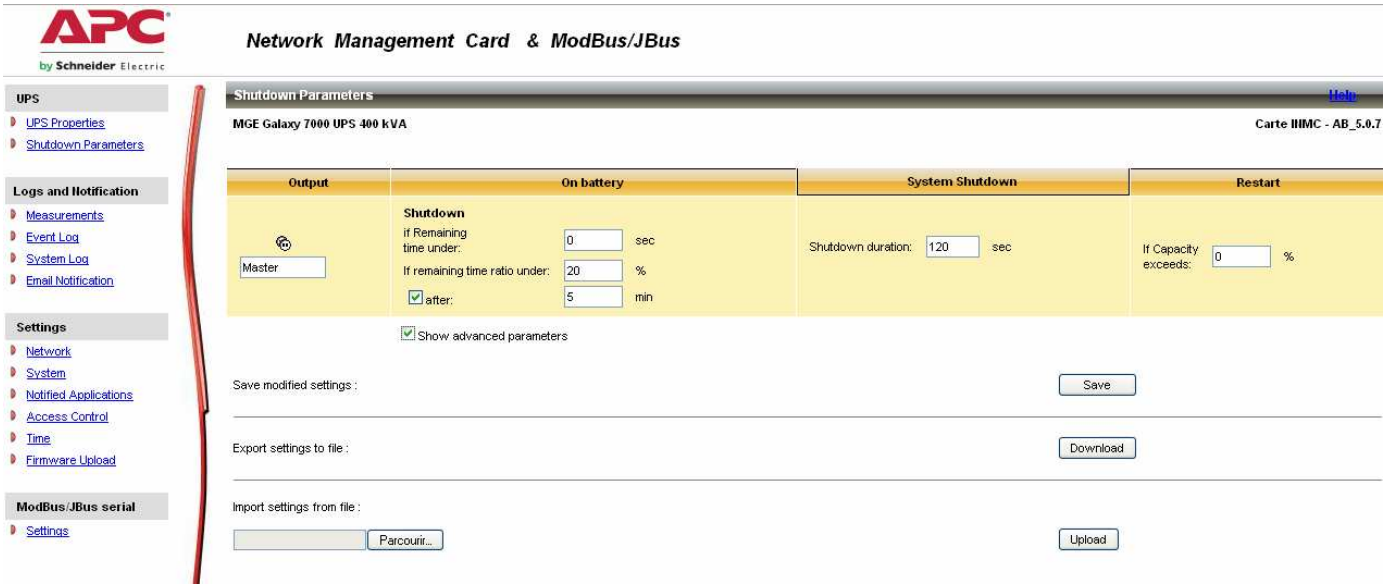
This menu is accessible only after entering the "Login" and "Password". The following screen is proposed automatically:

The default login and password are: MGEUPS

Each field accepts up to 10 characters max.
After the login and password are entered, they remain active for 5 minutes.
If the browser is closed, they will have to be re-entered.

An error in either field results in systematic rejection of the requested action (save, page access, card reboot…). After three unsuccessful attempts, the browser must be rebooted.
These two fields do not travel "decoded" on the IT network. They are encrypted with an MD5 type algorithm, ensuring total confidentiality.
In the event of **password loss**, the user can return to the default values via the maintenance menu.

Click on the "***Shutdown parameters***" section in the menu to see the list of parameters.



When you click the Show advanced parameters option, extra parameters are displayed. These parameters enable, in particular, adjustment of certain thresholds related to the percentage of remaining battery charge level.

The Output column enables the output to be named (maximum 20 characters, "Master" by default).

Shutdonw criteria are describe below:

- ***If remaining time under*** (0 to 99999 seconds, 180 by default) is the minimum remaining backup time from which the shutdown sequence is launched.

- *If remaining time ratio under* (0 to 100%); this value cannot be less than that of the UPS and is the minimum remaining battery capacity level from which the shutdown sequence is launched. (20% be default)

- *after* (0 to 99999 minutes, not validated by default) is the operating time in minutes left for users after a switch to backup before starting the shutdown sequence.

Shutdown duration (120 seconds by default) is the time required for complete shutdown of systems when a switch to backup time is long enough to trigger the shutdown sequences. It is calculated automatically at the maximum of Shutdown duration of subscribed clients but can be modified in the ***Advanced*** mode.

The ***restart*** section is not used for Galaxy 7000.

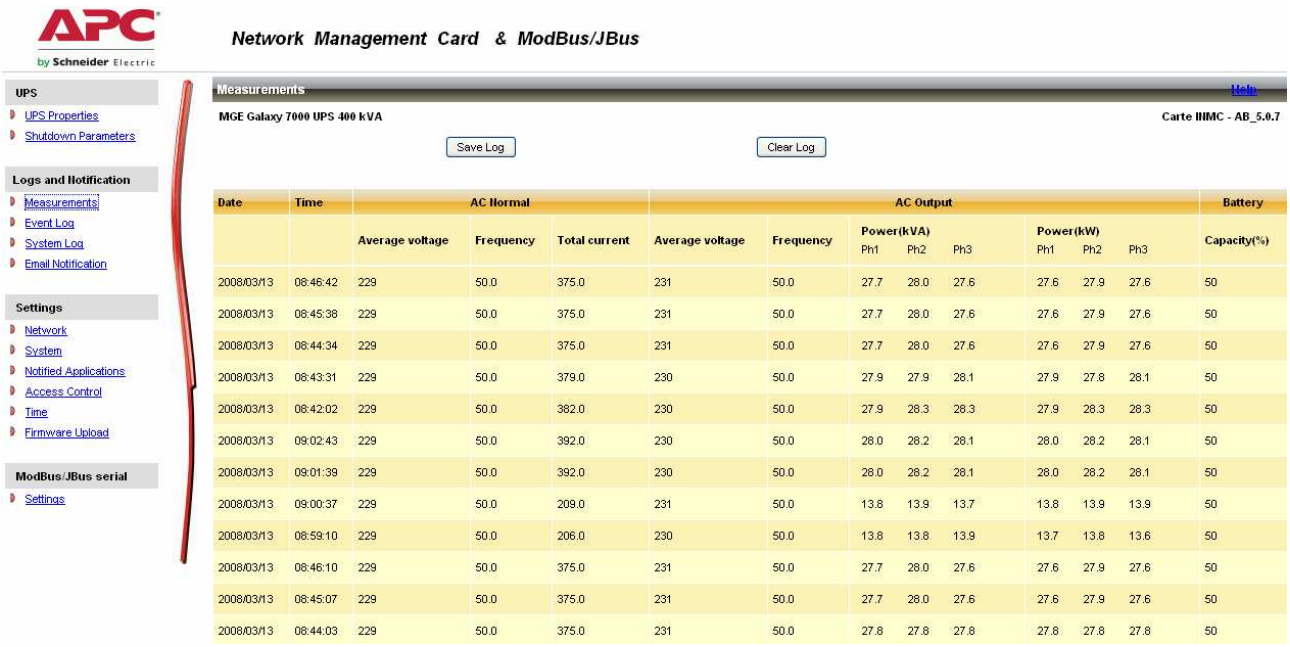
Export settings to file: Enables exportation ("Download" button) and saving of card configuration information.

Import settings from file: Enables selection of a configuration file ("Browse" button) and uploading ("Upload" button) of card configuration information

The administrator has to click on Save to save any modifications.

6.2.4 Measurements

Click on "**Measurements**" in the menu



Date	Time	AC Normal			AC Output									Battery
		Average voltage	Frequency	Total current	Average voltage	Frequency	Power(kVA) Ph1	Power(kVA) Ph2	Power(kVA) Ph3	Power(kW) Ph1	Power(kW) Ph2	Power(kW) Ph3		Capacity(%)
2008/03/13	08:46:42	229	50.0	375.0	231	50.0	27.7	28.0	27.6	27.6	27.9	27.6		50
2008/03/13	08:45:38	229	50.0	375.0	231	50.0	27.7	28.0	27.6	27.6	27.9	27.6		50
2008/03/13	08:44:34	229	50.0	375.0	231	50.0	27.7	28.0	27.6	27.6	27.9	27.6		50
2008/03/13	08:43:31	229	50.0	379.0	230	50.0	27.9	27.9	28.1	27.9	27.8	28.1		50
2008/03/13	08:42:02	229	50.0	382.0	230	50.0	27.9	28.3	28.3	27.9	28.3	28.3		50
2008/03/13	09:02:43	229	50.0	392.0	230	50.0	28.0	28.2	28.1	28.0	28.2	28.1		50
2008/03/13	09:01:39	229	50.0	392.0	230	50.0	28.0	28.2	28.1	28.0	28.2	28.1		50
2008/03/13	09:00:37	229	50.0	209.0	231	50.0	13.8	13.9	13.7	13.8	13.9	13.9		50
2008/03/13	08:59:10	229	50.0	206.0	230	50.0	13.8	13.8	13.9	13.7	13.8	13.6		50
2008/03/13	08:46:10	229	50.0	375.0	231	50.0	27.7	28.0	27.6	27.6	27.9	27.6		50
2008/03/13	08:45:07	229	50.0	375.0	231	50.0	27.7	28.0	27.6	27.6	27.9	27.6		50
2008/03/13	08:44:03	229	50.0	375.0	231	50.0	27.8	27.8	27.8	27.8	27.8	27.8		50

The following measurements are saved and time-stamped:

"***AC Normal : Average voltage***": Value of the utility average voltage supplying the UPS **(1)**

"***AC Normal : Frequency***": Value of the utility frequency supplying the UPS **(1)**

"***AC Normal : Total current***": Value of the utility total current supplying the UPS **(1)**

"***AC Output : Average voltage***": Value of the output average voltage of your UPS

"***AC Output : Frequency***": Value of the output frequency of your UPS

"***AC Output : Power (kVA)":*** Value in kVA of the output power of your UPS for each phase

"***AC Output : Power (kVW)":*** Value in kW of the output power of your UPS for each phase

"***Battery : Capacity (%)":*** Percentage of charge available in the battery **(1)**

The save frequency of these values is defined in the **"System"** page (60 seconds by default). Approximately 435 time-stamps are stored permanently on the card. The oldest time-stamps are automatically deleted.

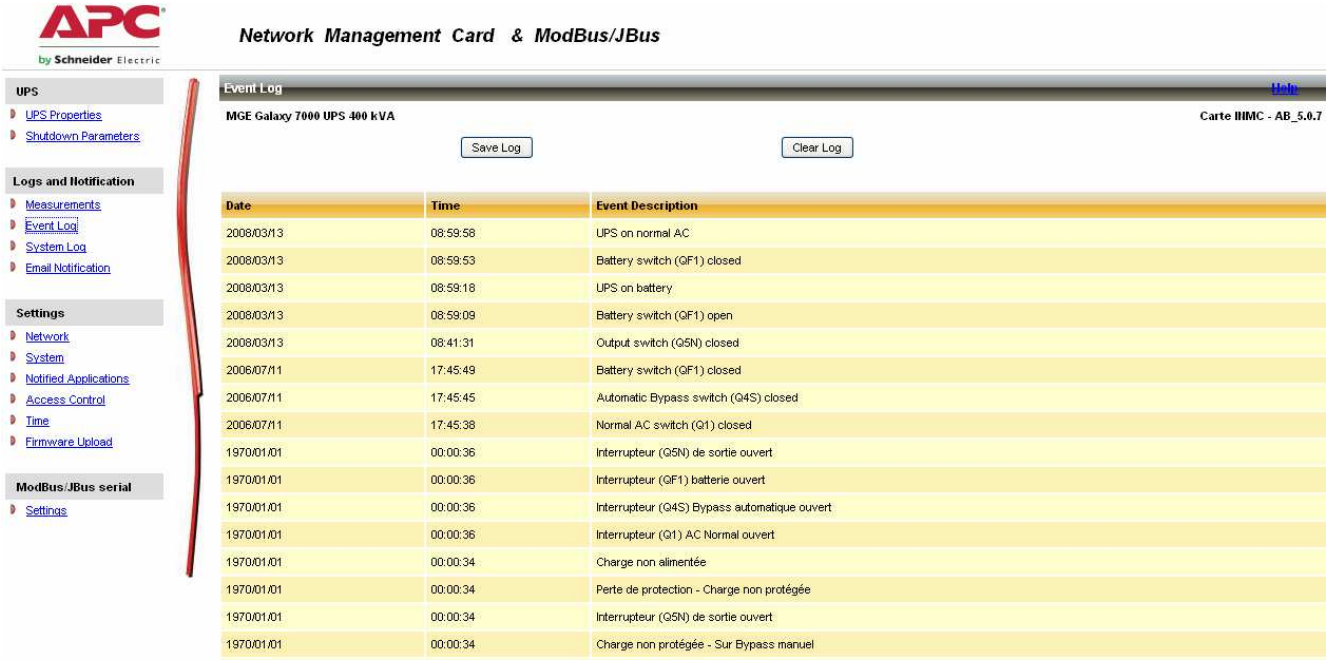
"***Save Log***" enables all saved values to be opened or saved in CSV format. (compatible with Excel type spreadsheets)

"***Clear Log***" enables deletion of all records. Enter the login/password to validate this action.

(1) : Value displayed is not sigficative with a Static Switch Cabinet unit.

6.2.5 Event log

Click on *"***Event Log***"* in the menu

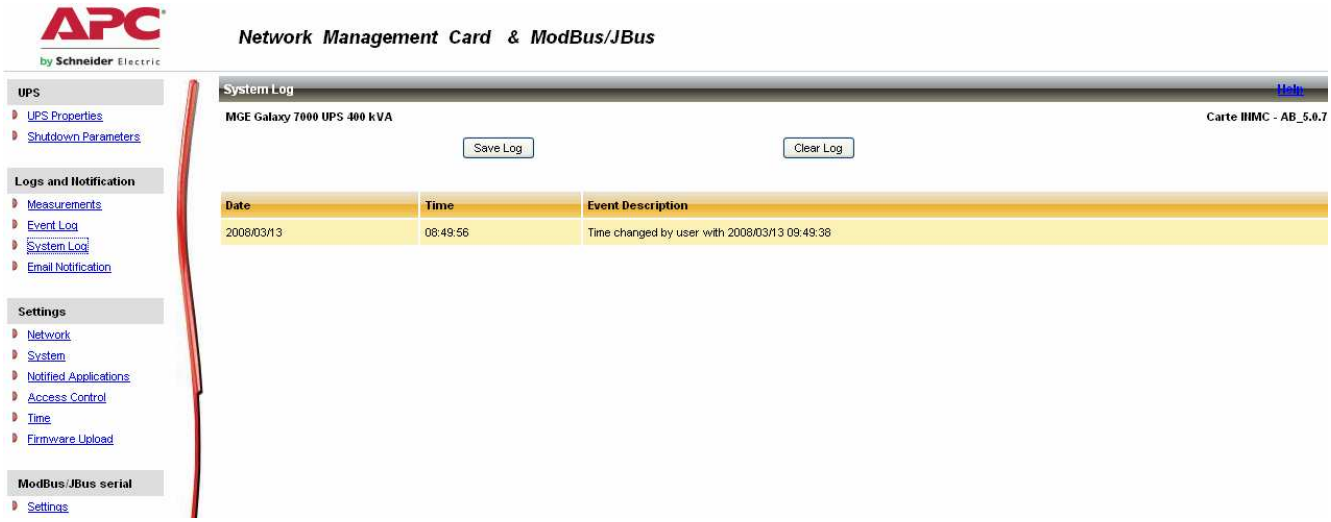


"***Save log***" enables all saved values to be opened or saved in CSV format. (compatible with Excel type spreadsheets)
"***Clear log***" enables deletion of all records. The administrator must enter his/her login / password to validate this action.

The table of managed alarms is included in the **appendix**.

6.2.6 System log

Click on *"**System log**"*. in the menu



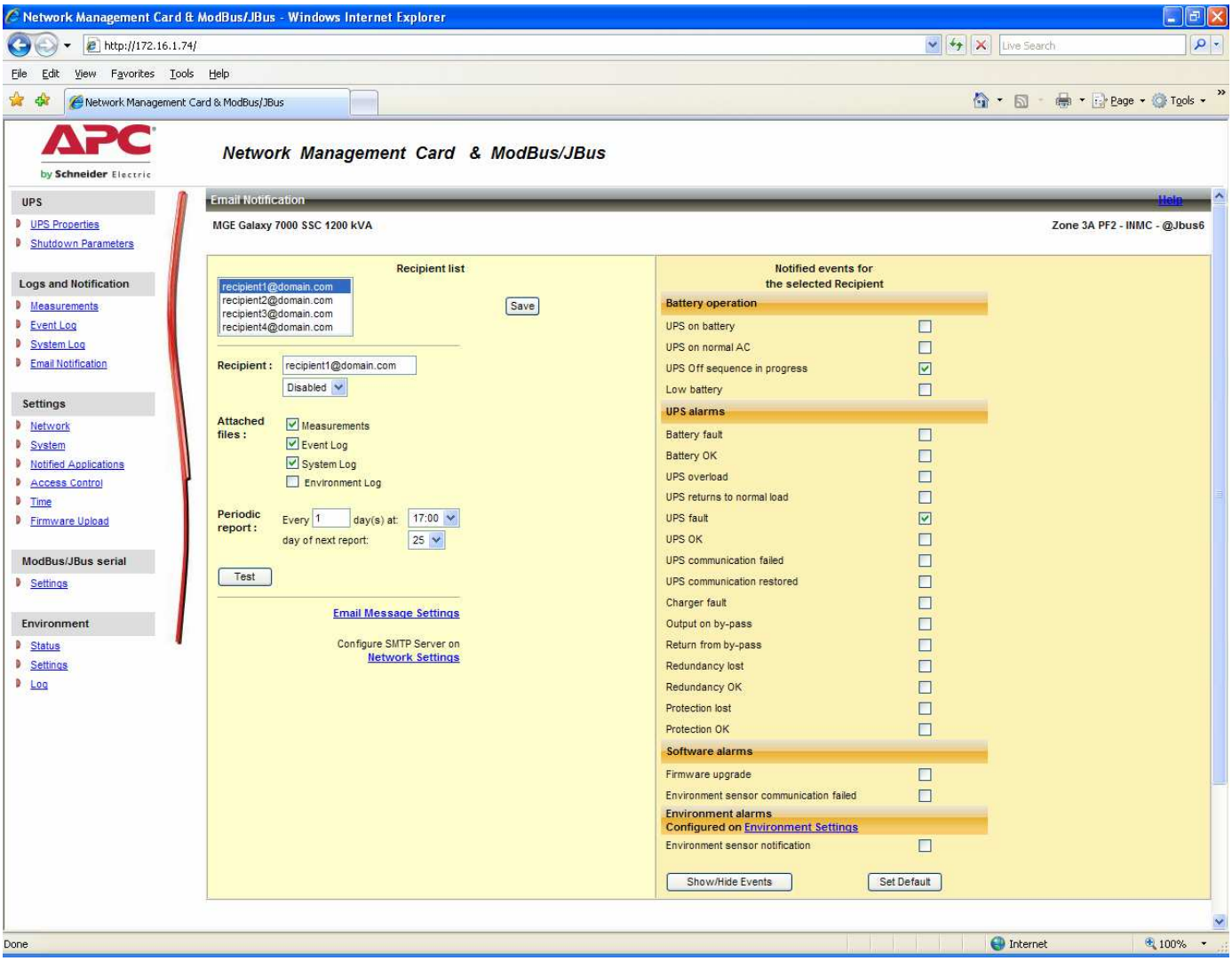
"***Save log***" enables all saved values to be opened or saved in CSV format. (compatible with Excel type spreadsheets)
"***Clear log***" enables deletion of all records. The administrator must enter his/her login / password to validate this action.

The table of managed alarms is included in the **appendix**.

6.3 Notification

6.3.1 Email Notification

The card offers the possibility of redirecting UPS alarms to an e-mail server. The format of these e-mails is compatible with mobile telephone transfer systems using text messages (SMS).



Value displayed is not sigficative with a Static Switch Cabinet unit:

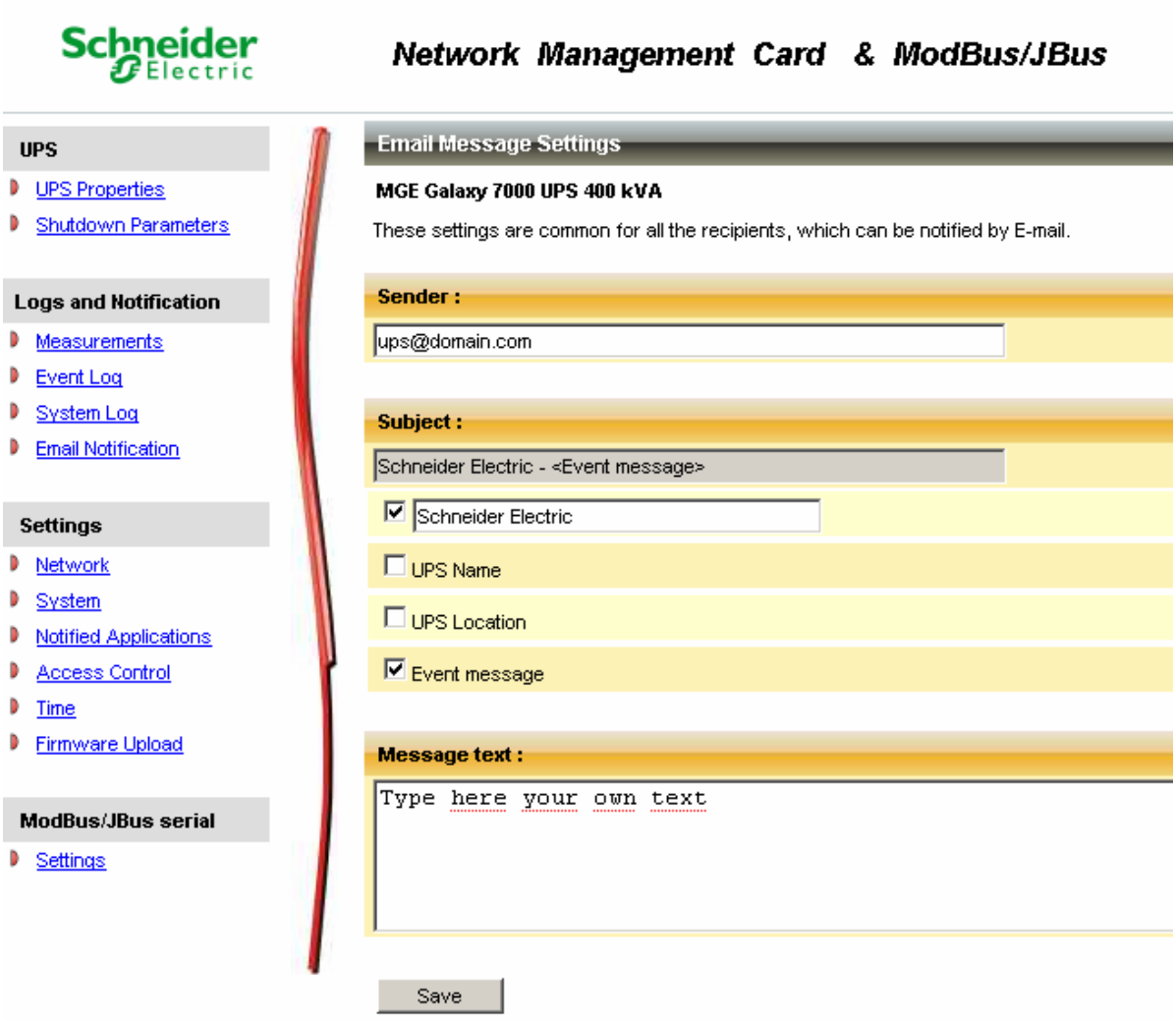
- UPS on Battery
- UPS On Normal
- UPS Off Sequence in progress
- Low Battery
- Battery Fault
- Battery OK
- Charger fault

Recipient List: On the left side of this page, up to four recipients can be configured to receive e-mails from the card. Each addressee has its own trigger events, selected from the right side of the page, for which an e-mail is sent. The card's log indicates e-mail transmission errors
Each recipient is configured with the following parameters
Recipient: (Field is limited to 49 characters) this is the e-mail address of the person or department to receive the e-mail.
The default value is **recipientx@domain.com**
Attached files: The files selected (Measurements, Event log, System log, Environment measurements) are enclosed with each e-mail sent. The files are sent in CSV format
Periodic report: In addition to the e-mails sent when events occur, a periodic e-mail containing the 3 log files can be sent to the recipient every x days at the time specified by the user.
To configure the first transmission, specify the day, time and frequency of the next transmission in the "next report" box. After this date, the page will show the date and time of the next transmission.
Data are sent in CSV format.
Save: Saves any modifications.
Test enables an e-mail to be sent to the recipient immediately. This is one way of checking e-mail transmission, particularly access to the SMTP server configured in "Network" settings. A transmission report is added to the system log.
The event label in the subject and text of the message is replaced with a test label.
If the user makes any modifications to the page, they must be saved before using the "Test" function.
Notified events:
The right side of the page shows the events that can be notified.
By default, only the main events of battery operation and a few UPS alarms are accessible. All the events appear if the Show/Hide Events option is actuated.
By default, two events are selected for notification. The user can modify this pre-selection by ticking other events or can, on the contrary, restore the initial configuration by clicking Set Default.
Email Message Settings: access to the message configuration page
Network Settings: enables the name of the SMTP server to be entered.
Export settings to file: Enables exportation ("Download" button) and saving of card parameterisation information.
Import settings from file: Enables selection of configuration file ("Browse" button) and uploading ("Upload" button) of card configuration information.

The administrator has to click on Save to save any modifications.

6.3.2 E-mail Message Settings

This page enables customisation of the content of the messages received by recipients of e-mails sent by the card.
Customisation is common to the four recipients that can be notified (see **E-mail notification**).



Sender

(59 characters maximum) identifies the source of the message. The default value is *ups@domain.com*.
This field is free. However, depending on the type of SMTP server configuration, it is possible that the server checks that the domain name contained in the Sender address exists, and even that the user in the Sender address belongs to this domain.

Subject

enables the user to specify the subject of the e-mail to be sent. By entering some free text and selecting from several optional fields, if desired, the message subject is built:

- UPS name recalls the name of the UPS; it may or may not be selected.
- UPS location recalls the geographic location of the UPS (see System Settings); it may or may not be selected.
- Event message identifies the event generating the e-mail; it may or may not be selected.
- Message text is a free zone.

The body of the e-mail sent is composed of:

- ***Message text***, which is free text.
- The date and time of the event, as saved in the log.
- URL of the card, enabling a direct link with the card to be established.
- Attachments, as configured for the e-mail recipients. - Duplication of the subject, as configured.

6.4 Configuration

The parameters of this menu can only be modified after entering the "Login" and "Password". The following screen is proposed automatically:

The default login and password are: MGEUPS

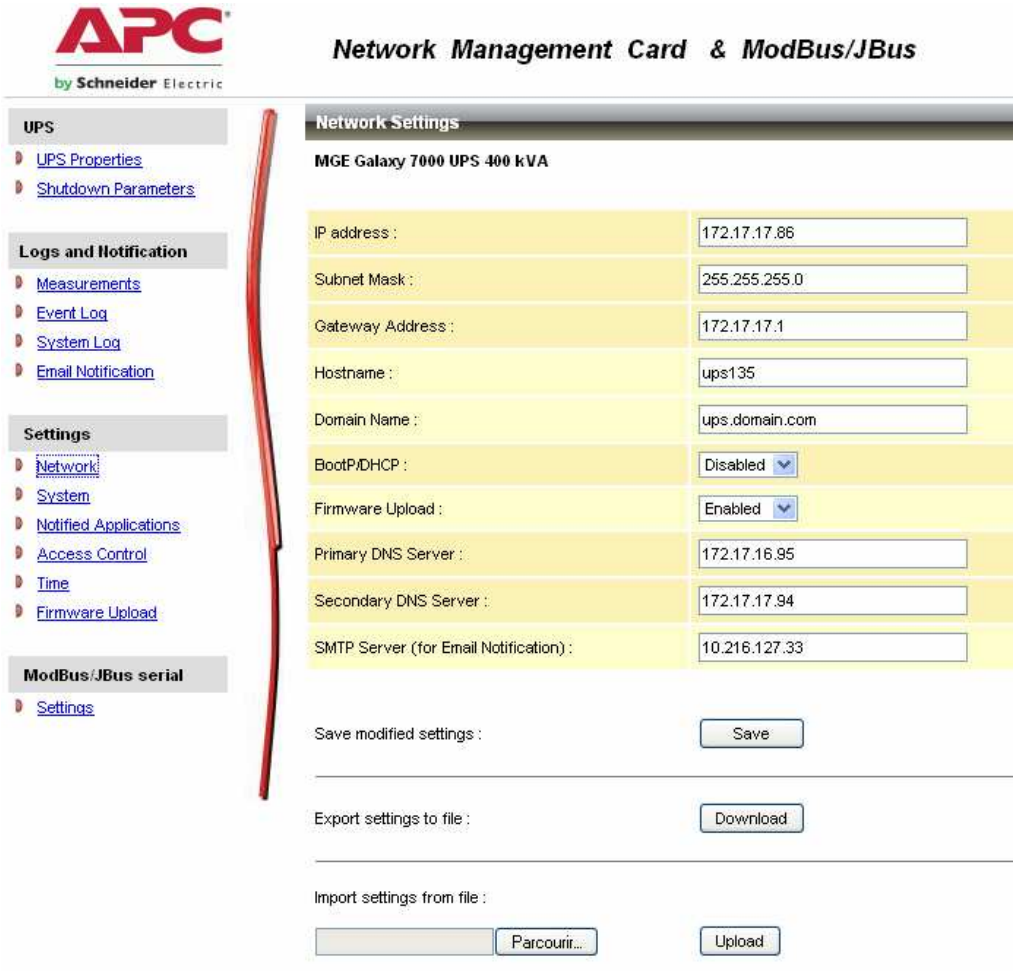
Each field accepts up to 10 characters max.
After the login and password are entered, they remain active for 5 minutes.
If the browser is closed, they will have to be re-entered.

An error in either field results in systematic rejection of the requested action (save, page access, card reboot…). After three unsuccessful attempts, the browser must be rebooted.
These two fields do not travel "decoded" on the IT network. They are encrypted with an MD5 type algorithm, ensuring total confidentiality.
In the event of **password loss**, the user can return to the default values via the maintenance menu.

6.4.1 Network settings

Click on "***Network***" in the menu.

This menu enables the administrator to configure the network parameters of the card and authorisation of the remote upgrade of the embedded system.



IP Address: The IP address of the card (e.g.: 172.17.22.252).
Subnet Mask: The mask of the sub-network of your network (e.g.: 255.255.255.0).
Gateway Address: Indicate the IP address of the gateway to access the stations located outside the card's subnet (e.g.: 172.17.17.1).
Hostname must be suited to the card. This is the first part of the fully qualified domain name, used by the DNS.
As the card does not support NetBIOS protocol, the hostname will only be sent to DNS if the DHCP server sends it the hostname with the new ***IP address***. This mechanism is described in the update of the DNS protocol **RFC 2136**
Domain Name is the domain to which the card belongs. This is the part of the fully qualified domain name that follows the hostname and is used by the DNS. The default value of the two parameters comprising the fully qualified domain name: ups.domain.com

BOOTP/DHCP: Authorises (choose "Enabled") configuration of network parameters with your BootP/DHCP server when the card is booted. Mode of card operation with server: After each startup, the card makes 5 attempts to recover the network parameters. If no response is received from the server, the card boots with the last saved parameters from the previous start. These parameters are those shown on the page.

The default value for this parameter is "Enable"

Note 1: If the hostname is not used, the IP address supplied by the DHCP server must be fixed to maintain connection with the clients installed on the stations to be protected.

Note 2: During the first connection, if the DHCP query is not successful, the NMC starts with the following IP configuration:

IP address:172.17.16.16

Subnet mask: 255.255.255.0

Gateway Address: 0.0.0.0

Firmware Upload: Authorise (chose "Enabled") remote updating of the card's embedded software.

The default value for this parameter is "Enabled".

Primary DNS Server: contains the IP address of the main DNS server ensuring conversion of the domain name to IP address.

Secondary DNS Server: contains the IP address of the secondary DNS server ensuring conversion of the domain name to IP address if the primary DNS server is not available.

SMTP Server: contains the name or IP address of the local server with which the card connects to send e-mails.

It may be filled in either as host + domain name (DNS resolution), or directly with the IP address.

The default value is smtpserver. The card uses the standard port (25) for sending e-mails.

Export settings to file: Enables exportation ("Download" button) and saving of card configuration information.

Import settings from file: Enables selection of a configuration file ("Browse" button) and uploading ("Upload" button) of card configuration information.

Important note:

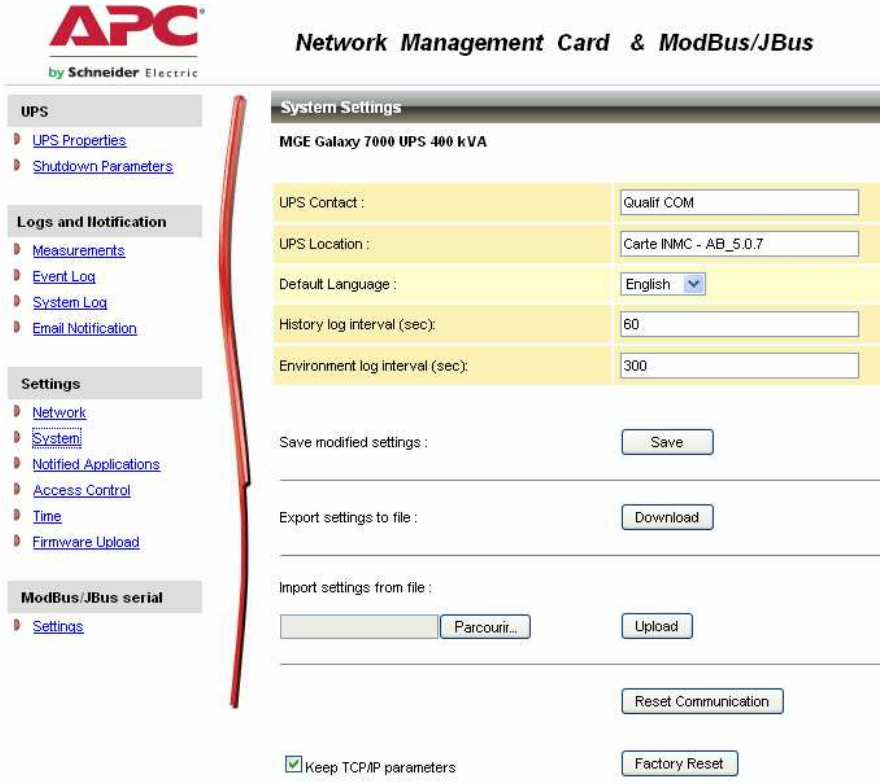
The card must be rebooted after any changes to these parameters.. See "System" page

Security: The administrator has to click on Save and enter his/her login/password to save any modifications.

6.4.2 System

Click on "***System***" in the menu.

This menu enables the customisation of the information on the **UPS properties** pages.



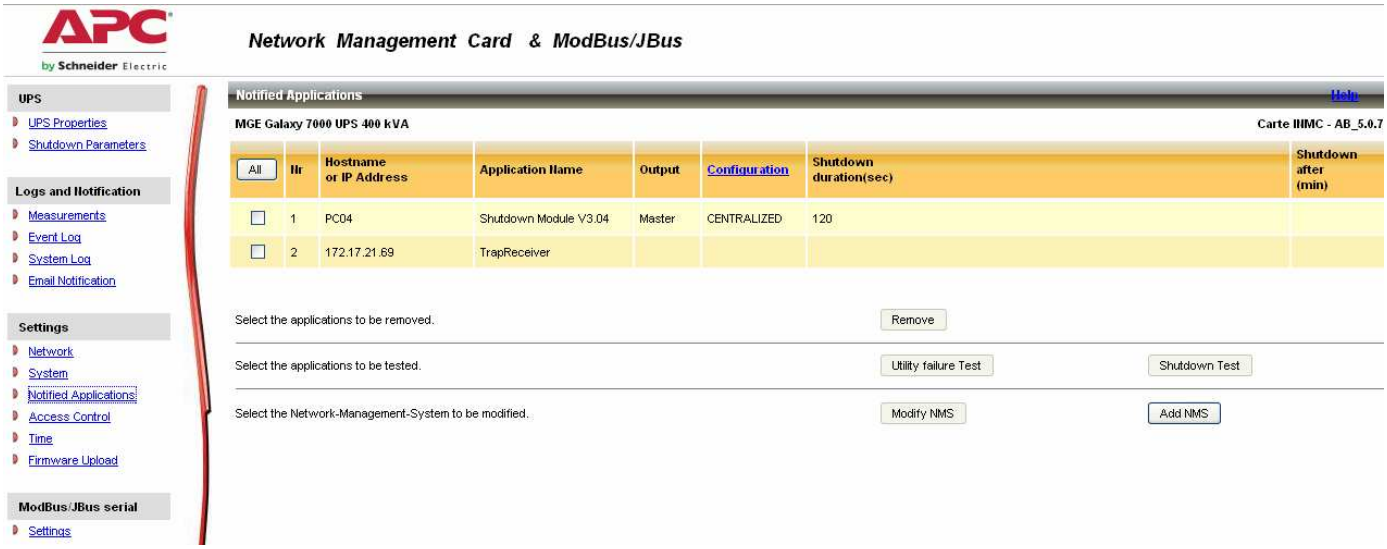
UPS Contact: This text field is limited to 49 characters. Enter the name of the person responsible for UPS administration at IT network level and/or electrical maintenance. This field does not appear on any other Web page. By default, its value is "Computer Room Manager".
UPS Location: Enter a description (limited to 49 characters) of the location of the UPS in your installation (e.g. Computer room E1-C066). This text is displayed in the home page. By default, its value is "Computer Room".
Default Language: Enables initialisation of the browser language at card connection.
Choice of one of the available languages: English, French, German, Spanish, Italian changes the language of the html interface pages (reboot the browser after modification).
History log interval: [from 5 to 99999 sec., 60 by default]. Measurement save period.
Environment log interval: [from 60 to 99999 sec., 300 by default]. Temperature and humidity measurement save period.
Reset Communication button: performs a remote reboot of the card without modifying the configuration. This action is compulsory for consideration of any changes made on the "Network Settings" page. Security of this operation is ensured by requesting Login and Password.
Factory Reset button: enables restoration of the default configuration of all the card's parameters. TCP/IP parameters: IP address, subnet mask, gateway and BootP/DHCP value are maintained if the "Keep TCP/IP parameters" option is selected. Security of this operation is ensured by requesting Login and Password. The default login and password are: MGEUPS
Export settings to file: Enables exportation ("Download" button) and saving of card configuration information.
Import settings from file: Enables selection of a configuration file ("Browse" button) and uploading ("Upload" button) of card configuration information.

6.4.3 Notified Applications

Click on "***Notified Applications***" in the menu.

Security: The administrator has to enter his/her login/password in order to view this information.

This menu enables:
The addition of the supervision stations receiving traps and configuration of the trap type.
To list all the Notified Applications and the main parameters.
To test the operation of notified applications
by simulating power loss
by sending a real shutdown sequence.



Up to 50 destinations can be managed by the card.

Important note: It is not necessary to add the Network Shutdown Modules protecting your servers in this list. These modules subscribe and unsubscribe themselves automatically.

Select an entry in the list to modify the values in the edit zone at the bottom of the page. The table displays the following information:

The ***All*** button: Allows the following information to be displayed:

Nr is the index where the application is stored into the table

Hostname or Address IP: By priority, the hostname of the computer is displayed when the IP address can be converted into a hostname by a DNS server or if the application has been entered as a hostname.

Application Name: sent by the application during subscription or entered manually.

Output: number of the UPS output from which the client is powered.

Configuration: shows where the parameters of the Network Shutdown Module come from: Local (coming from the application) or Central (coming from the card).

The **Central shutdown configuration** is available by clicking on the Configuration link.

Shutdown duration: the shutdown duration necessary to properly shutdown the computer.

Shutdown after: the time available to the user from the power failure until the launch of the shutoff sequence of the UPS and equipment. This parameter is optional.

Many actions are available on this page:

Remove: Depending on the kind of application, the selected ones will definitively disappear from the table as SNMP applications, or they will disappear and automatically re-subscribe as Network Shutdown Module applications.

Utility failure Test: Two alarms, 'Utility failure' and 'Utility restored' spaced 60 seconds apart, will be sent to the applications selected, making sure that the applications can be reached over the network.

Shutdown Test: This test simulates a UPS on battery operation. It enables an easy check to see if the server protection works correctly.

- No intervention on the UPS is required.
- The applications selected will process the simultaneous alarms and perform an actual shutdown sequence.

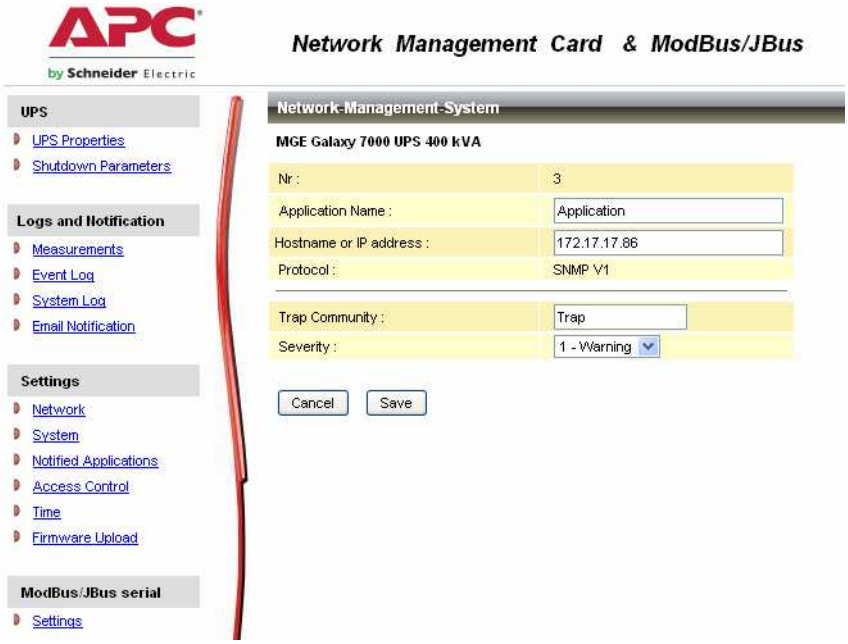
WARNING!

- This test will generate a REAL shutdown sequence of the selected servers on which the Network Shutdown Module application is running.

Add NMS: allows an SNMP trap receiver to be added such as a Network Management System.

Modify NMS: allows an SNMP trap receiver to be modified.

Both buttons open a new window where it is possible to enter the Application name, the Hostname or IP Address, the Trap community and the severity.

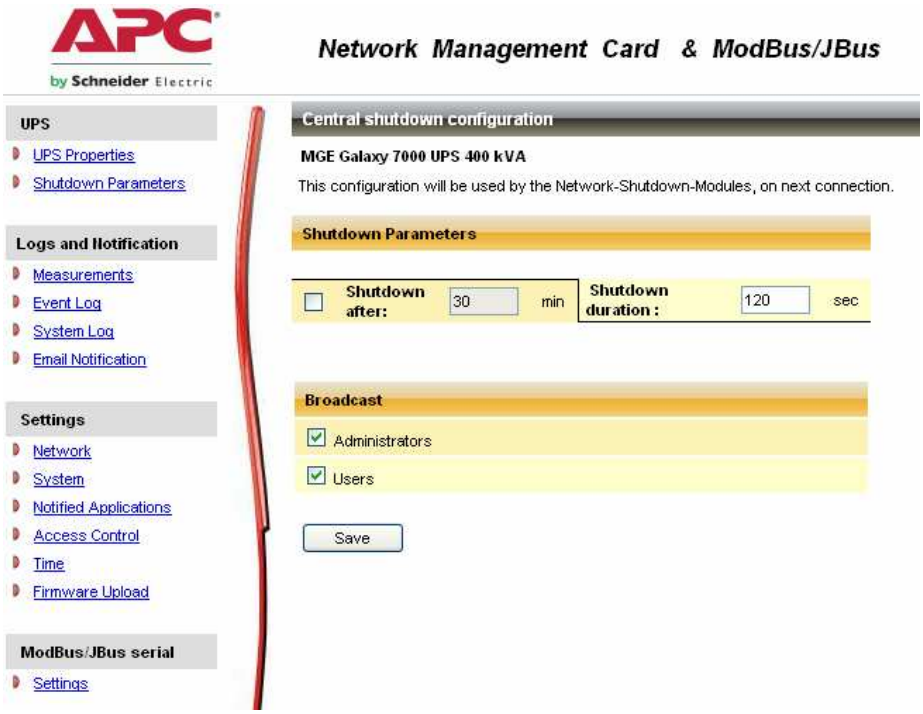


The default severity value is 1 - Warning

6.4.4 Central shutdown configuration

The menu Shutdown Parameters is not present with a UPS Static Switch Cabinet.

Click on "***Notified Applications***" in the menu, then "Configuration".



This page is used to define either the "shutdown" or the "notification" settings used by the Network Shutdown Modules that connect to Network Management Card. These settings are used by the Network Shutdown Modules if they are in central-configuration mode or if their configuration is not valid.

Shutdown duration: the shutdown duration necessary to properly shutdown the computer.
Shutdown after: the time available to the user from the power failure until the launch of the shutoff sequence of the UPS and equipment. This parameter is optional. Uncheck the box if you wish not to use this parameter.
Broadcast : Sends network notifications to the Administrators and Users groups on events declared in the server hosting the NSM

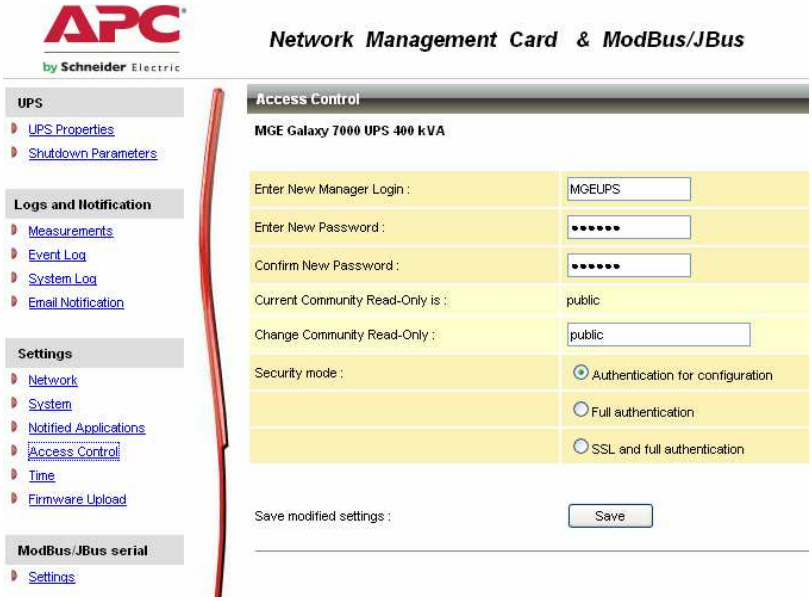
If you wish to set up a new configuration for the Network Shutdown Modules already set to "central-configuration mode", proceed as indicated below:
Change the Network Shutdown Module parameters in the "Notified Applications" page.
Click the "Save" button.
In this page, select the NSMs for which you want to apply the new configuration.
Press the "Remove" button.
The NSMs selected will disconnect then reconnect and use the new configuration.

6.4.5 Access control

Click on "***Access Control***" in the menu.

To access this page, the login and password are systematically requested if they have not already been entered.

This menu enables configuration of the different parameters enabling secure access to the card via a browser or SNMP.



Login: This text field is limited to 10 characters. - Enables secure access and modification of pages. Default value "MGEUPS".

Change / Confirm password: This text field is limited to 10 characters. - Enables secure access to Configuration menu pages. Default value "MGEUPS".

Current Community Read name: Indicates the SNMP community name used for read operations.

Change Community Read-Only: This text field is limited to 49 characters - Enables the SNMP community name used for read operations to be changed.

Security mode: manages the various authentication methods for page access

Authentication for configuration: Only the configuration pages are protected by login / password.

Full authentication: All pages are protected by login / password.

SSL and full authentication: All pages are protected by login / password and are only accessible in SSL

SSL Access: When selected, access to the Web interface is made in secure mode (https).

Connections with Network Shutdown Modules stay in standard mode (secure TCP)

SSL Security Implementation:

SSL ➔version 3.0

TLS ➔version 1.0

Method ➔ TLS_RSA_WITH_512_MD5

Auth ➔ RSA

Key Exchange ➔ RSA

Encryption ➔ RC4_512

Digest ➔ MD5

Changes take effect after a card reboot

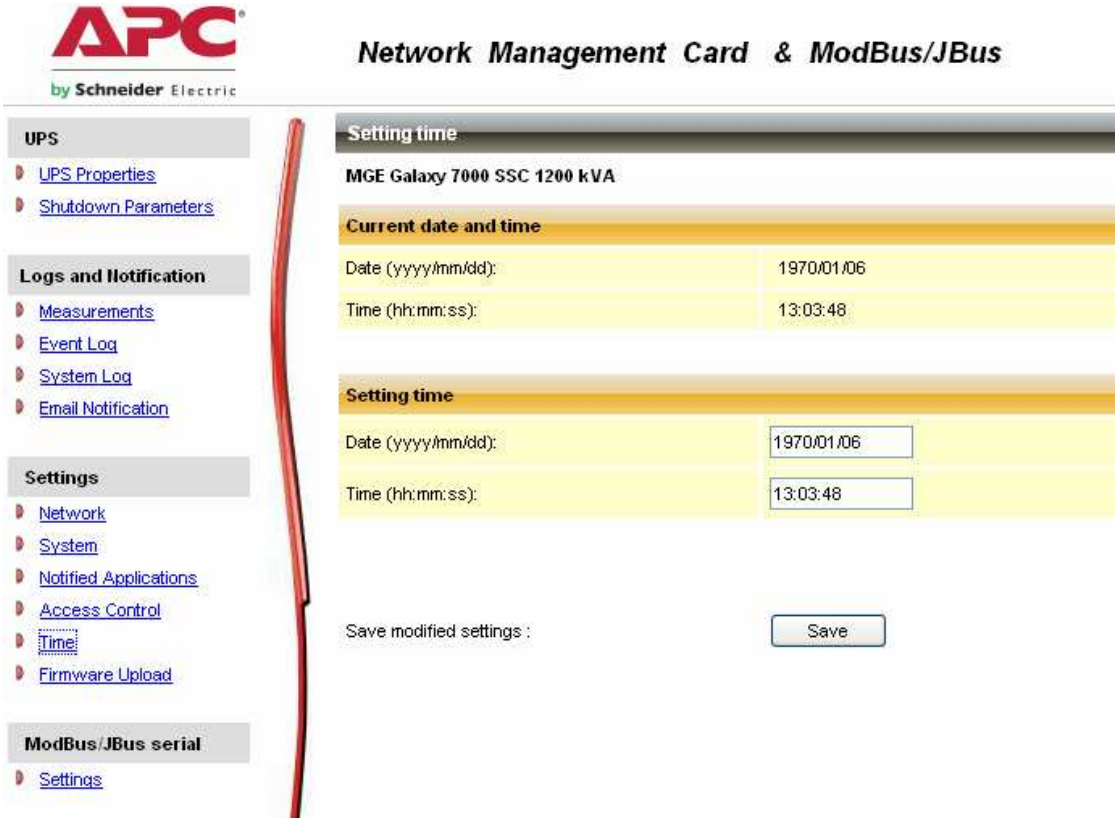
Export settings to file: Enables exportation ("Download" button) and saving of card configuration information.

Import settings from file: Enables selection of a configuration file ("Browse" button) and uploading ("Upload" button) of card configuration information

6.4.6 Date and time

Click on "***Date and Time***" in the menu.

This menu enables initialisation of the date and time of the card in three different ways.
The date format is always of year/month/day type



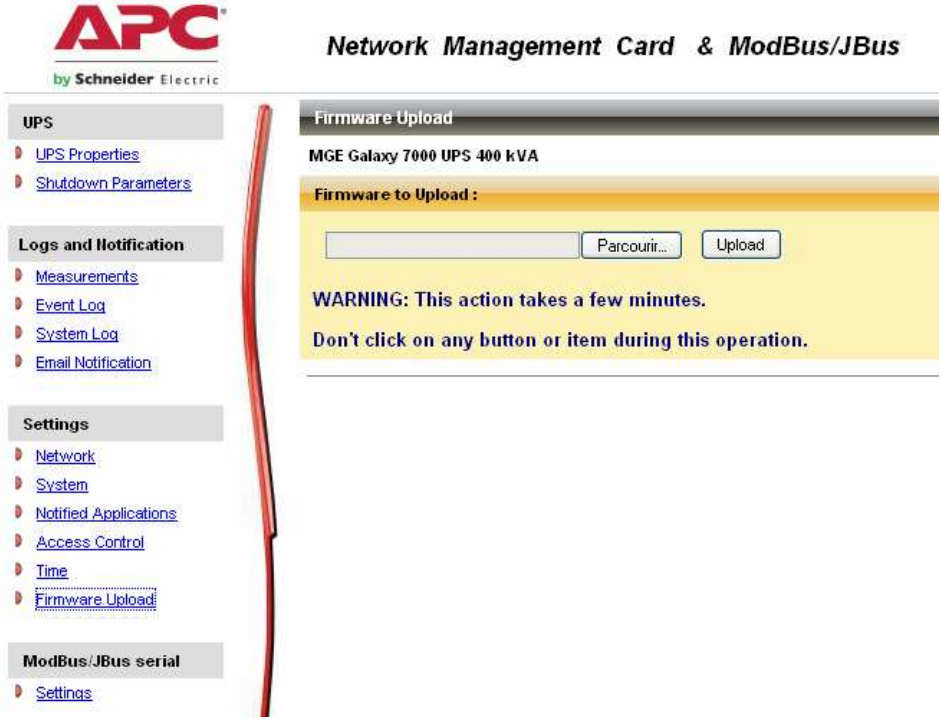
Set manually: Enables initialisation of the date and time of the card, with the values entered in the Date and Time fields. This update is made after clicking on the "Save" button.
Maximum drift is +/- 2 min./month

Note 1:
The even the card is used in a UPS supporting time-stamping, the card's time is automatically synchronized with that of the UPS.

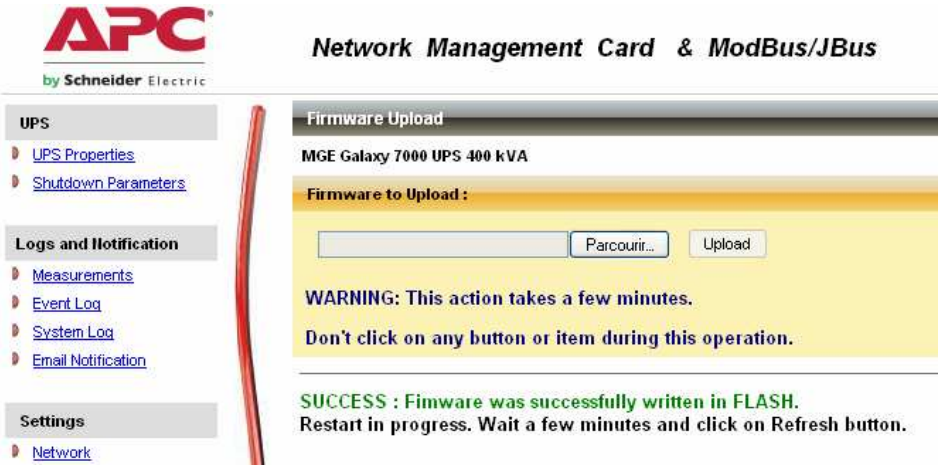
6.4.7 Firmware upload

Click on "***Firmware Upload***" in the menu.

This menu enables a new firmware version to be uploaded



To upload a new version of the card's firmware, select the file to be loaded using the "Browse…" button and click Upload.
Do not interrupt the operation before the card displays the following screen:



6.5 Environment Sensor (option)

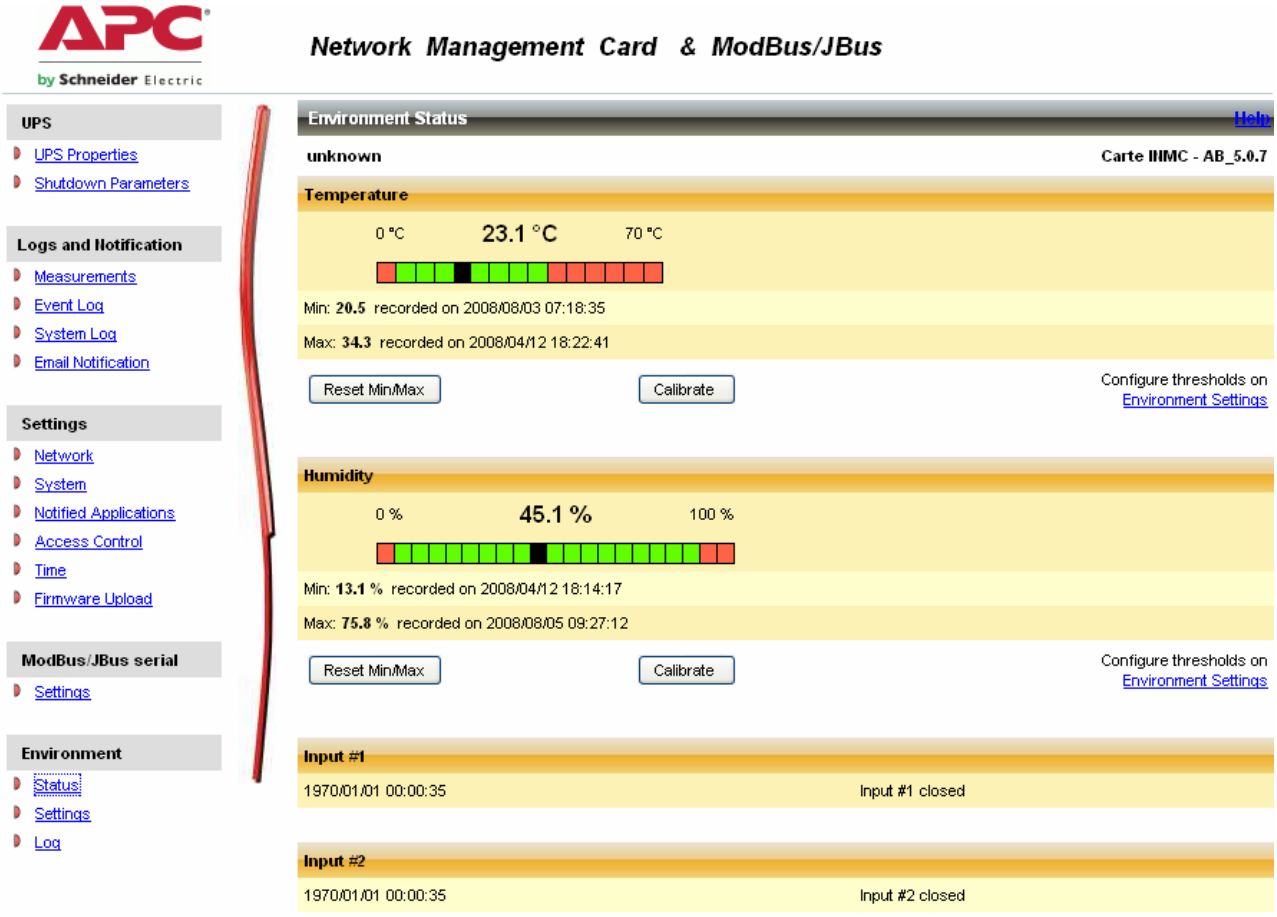
The environment sensor (66846) is an option that enables temperature and humidity to be measured, and indication of the position of two external contacts. It is connected with a standard network cable to the Card Settings port of the Network Management Card.
The card automatically detects sensor presence. The main menu then displays an additional section "Environment" with the following elements:
Status
Configuration
Log

Important note: To switch the serial port to the configuration mode, just disconnect the cable and **reset the card**.

6.5.1 Characteristics

Temperature measurement from 0 to 70 ℃ with +/- 1° C accuracy
Measurement of humidity from 0 to 100% with +/- 6% accuracy
Min / max time-stamped function for temperature and humidity
Choice of temperature readings in Celsius or Fahrenheit
High and low thresholds, hysteresis and offset adjustable via Web interface
Possibility of notification of status changes by e-mail, SMS or SNMP trap
Position detection of 2 dry contacts (maximum sensor/contact distance: 20 m)
Name and status of each configurable contact
Recording of events and measurements in the card log
Possibility of shutting down the installation safely if one of the thresholds is exceeded or dry contact status change
Connection to the Network Management Card by CAT5 straight RJ45 network cables (maximum card/sensor distance: 20 m)

6.5.2 Environment Status



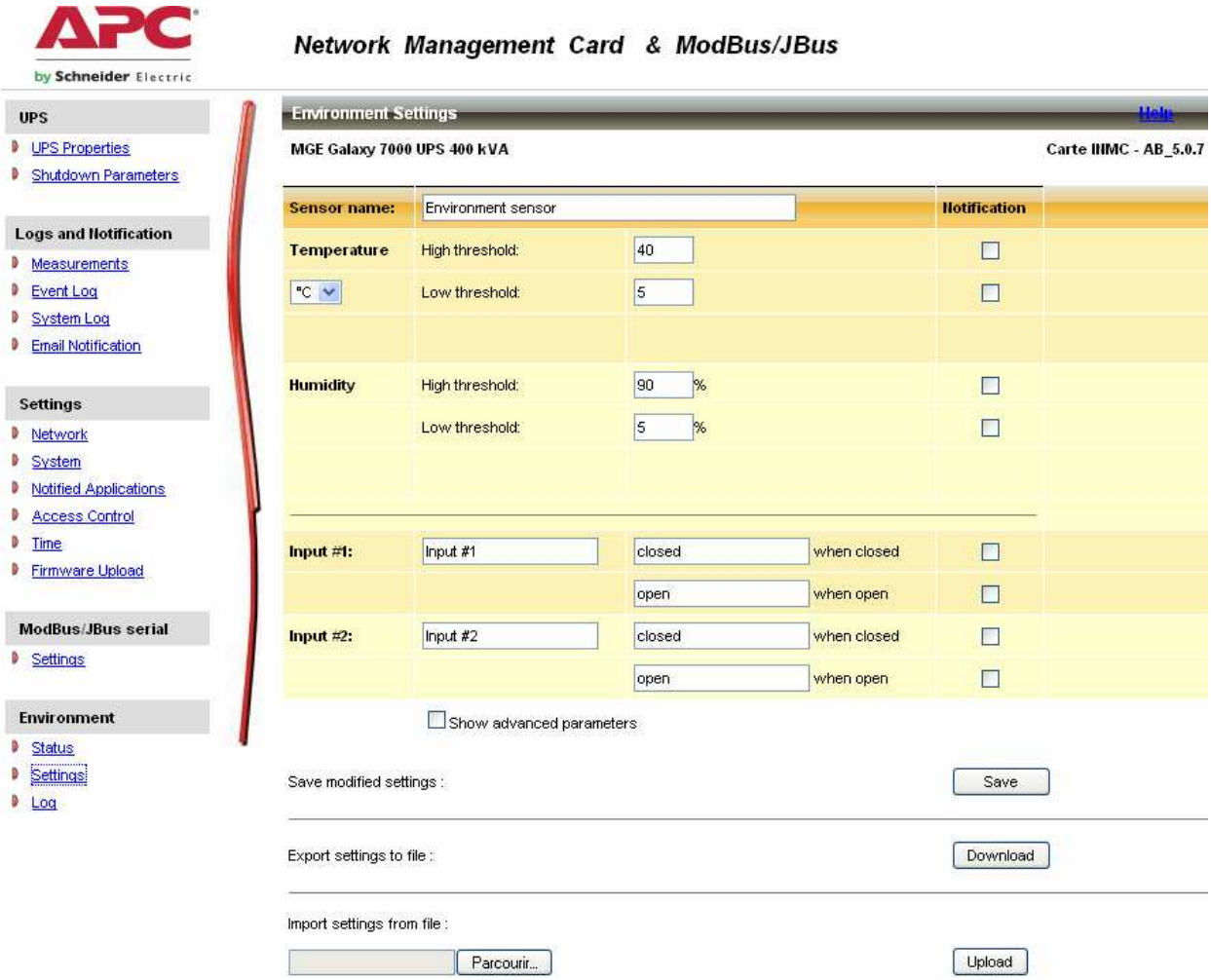
For both measurements, a graduated gauge proposes the following functions:
The cursor indicates the current value.
Two red zones to the left and right represent the high and low thresholds that can be set on the Environment Settings page.
When the measured value enters one of these zones, an alarm can be notified (see Notification parameter in the Environment Settings page).
Time-stamped minimum and maximum temperatures show the extreme values recorded since the last Reset Min/Max, a thin dotted line shows their positions on the gauge.
Min and Max can be forced at any time to the current value by clicking on the ***Reset Min/Max*** button.

Calibrate: The sensor is factory-calibrated, but the user can apply an offset to adjust the measurement.

Input #1 and Input #2 show the position of the two contacts acquired by the sensor.
The position is displayed with the parameters entered in the Environment Settings page.
The last status change of each contact is time-stamped.

The Internet browser updates this page every 10 seconds

6.5.3 Environment Settings



The environment sensor measures temperature, humidity and gives the status of the 2 contacts (used for door, alarms or generator unit).
The temperature and humidity thresholds can be adjusted and can trigger notification and correct shutdown of the protected system.
The Sensor name is the function name given to the sensor, usually it enables location of the sensor.
Temperature: Choose the temperature unit (℃ or ℉) from the s election box.
High threshold: if this value is exceeded, a notification if enabled. The default value is 40 ℃ / 104 ℉.
Low threshold: If this value is exceeded, a notification if enabled. The default value is 5 ℃ / 41 ℉.

Hysteresis must be set to prevent multiple notifications if temperature fluctuates around a threshold.
The default value is 2 ℃ / -3.6 ℉.
The high alarm disappears when the value drops below the High threshold - Hysteresis value
The low alarm disappears when the value returns above the Low threshold - Hysteresis value

Humidity
High threshold: If this value is exceeded, a notification is sent if this is validated. The default value is 90%.

Low threshold: If this value is exceeded, a notification is sent if this is validated. The default value is 5%.
Hysteresis must be set to prevent multiple notifications if humidity fluctuates around a threshold. The default value is 5%.
The high alarm disappears when the value drops below the High threshold - Hysteresis value
The low alarm disappears when the value returns above the Low threshold - Hysteresis value
Input #1 and Input #2: Enter an identifier corresponding to the acquired contact (e.g.: rack door, air conditioning, generator unit, etc.). Max. length is 28 characters.
when closed and when open: are the names associated to the two contact positions. (e.g.: "open" and "closed" for a door, "On" and "Off" for a generator).
Each status change triggers a notification if enabled.

When the Notification box is enabled, the following functions are activated for each event selected:
display in the list of current alarms
Consideration in the **UPS log**
SNMP trap generation
notification by e-mail (if the Environment sensor notification option is enabled in the **e-mail notification** page)

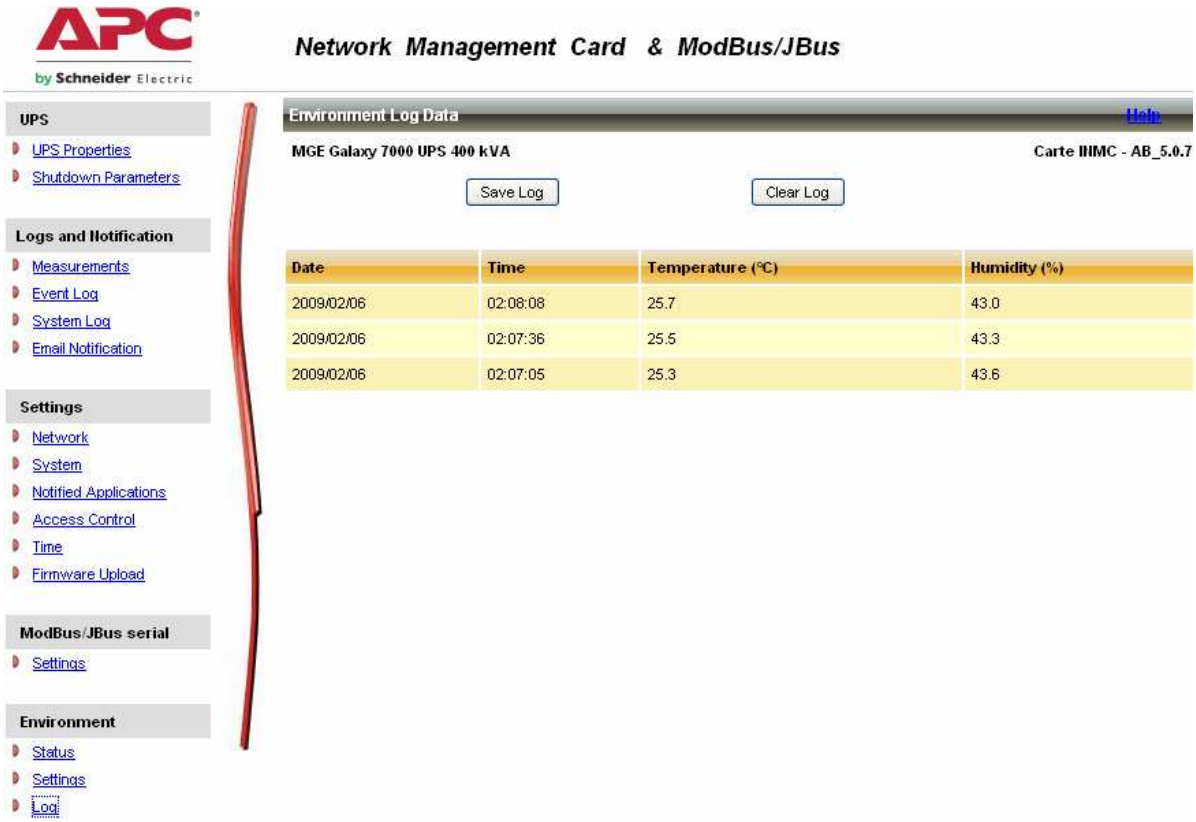
The list of messages is given in the **appendix**

System shutdown can be triggered for each notification if this option is enabled. If notification is disabled, the Shutdown option cannot be used.

Export settings to file: Enables exportation ("Download" button) and saving of card configuration information.
Import settings from file: Enables selection of a configuration file ("Browse" button) and uploading ("Upload" button) of card configuration information.

Security: The user must be identified to access this page.

6.5.4 Log



The two environment sensor measurements: Temperature and Humidity are recorded at an interval defined by the Environment log interval in the **System settings** page.

By default, this period is 300 seconds.

Each measurement is dated and stored in the log of the UPS's communication card.

The size of log files is limited by a time indexing system.

The user can ***Save*** the log on his/her workstation at any time, in a CSV format file.

The user can also ***Clear*** the files contained in the card to reset the log.

7 Server protection

7.1 Set-up of the shutdown parameters

The Network Shutdown Module, on protected server boot, subscribes itself automatically to **notified applications** list and sends its essential data:

IP Address or hostname of the server on which it is installed: So that the card can inform it of power events.

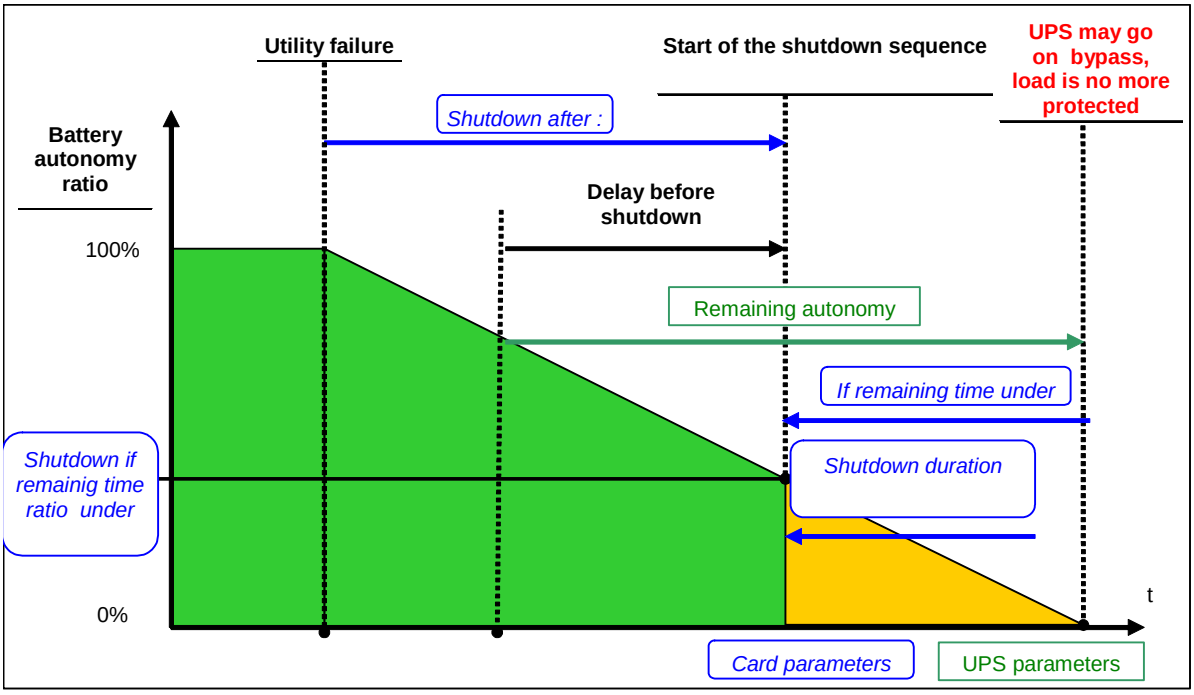
Time required to shutdown the server (Shutdown Duration, configurable in the "Set-up" menu of each NSM): The card takes into account the longest shutdown time of all the Network Shutdown Modules subscribed (This is the Shutdown duration of the **Shutdown parameters**) page to manage UPS shutdowns without affecting any of Shutdown Modules connected.

During normal operation, the Network Shutdown Module periodically checks its connection with the card.
In case of a major power event, the card sends information to the Network Shutdown Module which reacts according to the situation. (shutdown order, programmed actions, messages to the administrator and to users via the network)

When the server shuts down, the Network Shutdown Module unsubscribes itself from the **notified applications**.

7.2 Shutdown criteria managed by the Network Management Card

During an extended power failure, three criteria may cause the server shutdown procedure to be initiated. If several criteria are selected, (See page **Shutdown parameters**), the first criterion encountered will launch the shutdown procedure.



7.2.1 Backup time before initiating the shutdown procedure (Shutdown After - Shutdown Timer)

When the UPS switches to battery, the Network Management Card starts the Shutdown Timer countdown and launches the system shutdown procedure at the end of the countdown.
This value must be chosen so that users have time to complete their tasks and disconnect, without exceeding battery backup time.

Note 1:
The Network Shutdown Module can also manage its own Shutdown Timer (configurable in the Shutdown Module"set-up" menu of each Network Shutdown Module) launched when the UPS switches to battery.
Note that if this criterion is selected to initiate system shutdown, automatic system reboot when power is restored is not guaranteed (e.g. power restoration if only this system was shut down).

7.2.2 Initiating the shutdown procedure when the battery autonomy ratio is lower than: (If remaining time ratio under)

When the card detects that the remaining time ratio (percentage) is less than the configured level, the shutdown sequence is started.
By default, this value is set at 20%.

This ratio is equal in % to :
Current autonomy time / Autonomy time announced at the beginning of the UPS on battery sequence
Note:
The UPS already manages an equivalent parameter for the end of backup pre-alarm.
The card does not accept values less than that programmed in the UPS.
Check the UPS documentation.

7.2.3 Shutdown when backup time is less than

When the Network Management Card detects that the percentage of backup time remaining is less than the value set, the shutdown sequence is started.

7.2.4 Shutdown duration

Duration (in seconds) required for the system protected by the Shutdown Modules to shut down.

The Network Shutdown Modules transmit their own "Shutdown duration" to the Network Management Card.
Based on these values (maximum Shutdown duration of all subscribed customer systems) that the card will send to the delayed shutdown order to the UPS.

8 Teleservice

8.1.1 Teleservice procedure

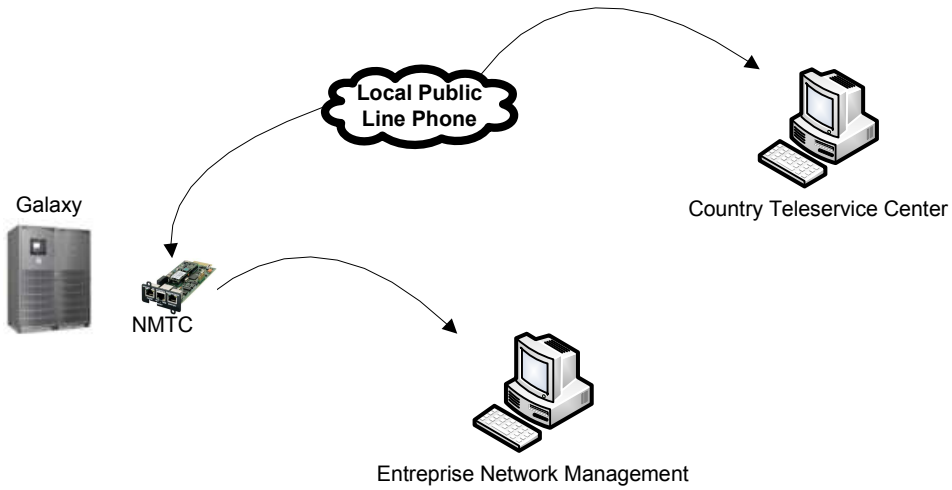
- Install the Network Management Teleservice Card kit using the present manual.
- Contact your customer service for start the Teleservice option.
- Send the form to your Teleservice center (by Fax or Internet).
- Your center will activate this service.
- Then you will receive an acknowledgement of receipt.

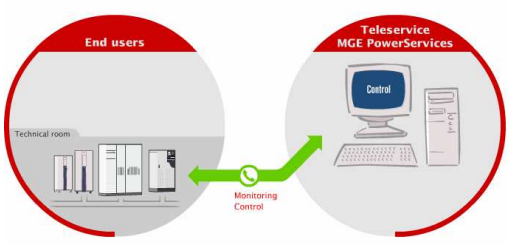
The information form must be sent back in order to trigger remote monitoring of your equipment.

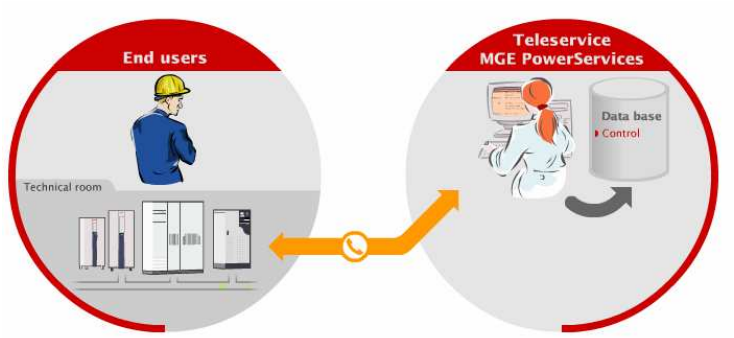
The Teleservice center gives the data base information from the information form sent with the Kit or accessible via www.mgeups.com

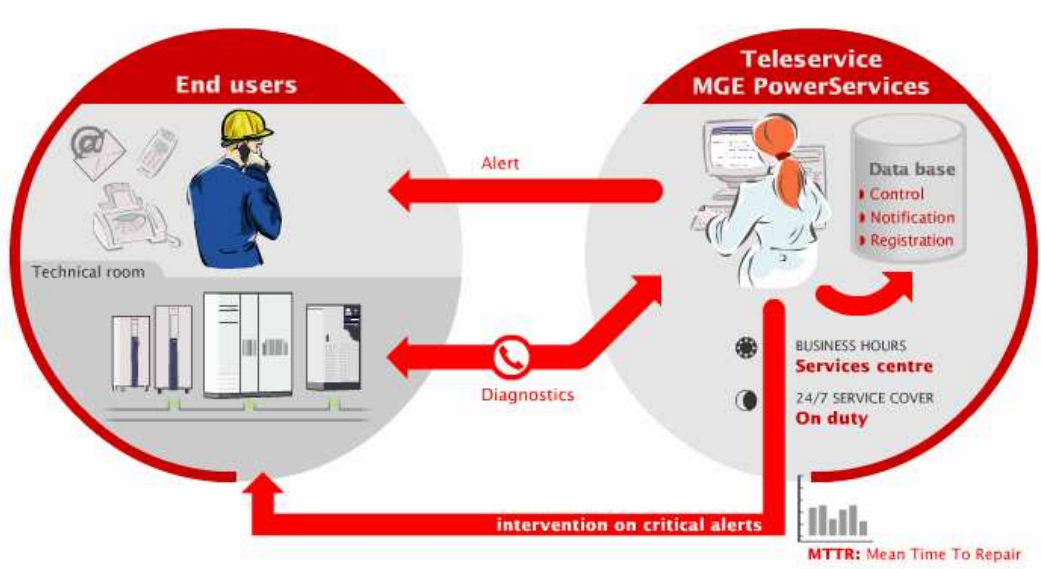
- During commissioning, the Teleservice center downloads the UPS data
- Recognition code
- Teleservice center telephone Number
- Call rule
- Starting from that moment, in case of condition changes, NMTC manages the activation of the call to the Teleservice center.

8.1.2 General overview



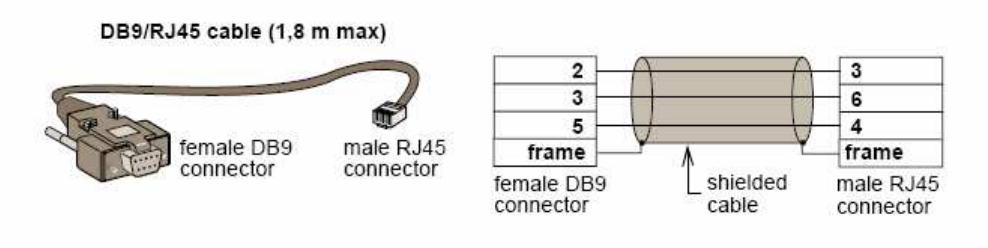

End users
Technical room
Monitoring
Control
Teleservice
MGE PowerServices
Control


End users
Technical room
Teleservice
MGE PowerServices
Data base
Control


End users
Technical room
Alert
Diagnostics
Teleservice
MGE PowerServices
Data base
Control
Notification
Registration
BUSINESS HOURS
Services centre
24/7 SERVICE COVER
On duty
intervention on critical alerts
MTTR: Mean Time To Repair

9 Configuration via RS232

Use the cord supplied with the card.



Connect the card to a computer equipped with a hyperterminal type emulator. The serial link must be set at 9600 baud, 8 bits, no parity, 1 stop bit, and without flow control.

Check that UPS power is on.

Enter the MGEUPS or mgeups password (non modifiable).

The menu is in English only.

```
-------------------------------------------
APC by Schneider Electric
Network Management Card & ModBus/JBus

-------------------------------------------
        1 : Reset
        2 : Network configuration
        3 : Set Login Password to Default
        4 : Return to Default Configuration
        5 : Jbus configuration
        6 : Sensor configuration
        0 : Exit
-------------------------------------------
```

9.1 Choice 1: Restart / Reset

Use this function to restart the card; two choices are possible

1 : Hardware Reset: Equivalent to a restart of the electrical power supply.

2 : Restart application: Restarts only the application part.

```
-------------------------------------------------------------------------
Reset
-------------------------------------------------------------------------
      1 : Hardware Reset
      2 : Restart application
      0 : Exit
-------------------------------------------------------------------------
```

9.2 Choice 2: Network Configuration

Use this function to access network settings.

```
---------------------------------------------------------------------------
Network settings
---------------------------------------------------------------------------
    1 : Read Network settings
    2 : Modify Network settings
    3 : Set Ethernet speed
    0 : Exit
---------------------------------------------------------------------------
```

9.2.1 Choice 1: Read Network settings

Enables reading of the card's routine settings

```
Network configuration :
    MAC address : 00:06:23:00:1F:8F
    Mode : Static IP
    IP address : 172.17.18.129
    Subnet mask : 255.255.248.0
    Gateway : 172.17.17.1
```

9.2.2 Choice 2: Modify Network settings

Enables the modification of network parameters

```
For each of the following questions, you can press <Return> to select the value
shown in braces, or you can enter a new value.
Should this target obtain IP settings from the network?[N]
Static IP address [172.17.18.129]?
Subnet Mask IP address [255.255.248.0]?
Gateway address IP address [172.17.17.1]?
Wait during your new configuration is saved ...
Reset the card to take into account the new configuration.
```

In DHCP mode, the card can receive the following parameters according to the DHCP server settings

IP address

Subnet Mask

Gateway address

Primary DNS server

Secondary DNS server

The card must be **restarted** in order for the new parameters to be taken into account.

9.2.3 Choice 3: Set Ethernet speed

Enables the modification of the network speed

```
Set the Ethernet speed : [1 : Automatic, 2 : 10 MBit]
1
New Ethernet speed : Automatic
Wait during the new setting is saved ...
Reset the card to take into account the new configuration.
```

The card must be **restarted** in order for the new parameters to be taken into account.

9.3 Choice 3: Lost password / Set Login Password to Default

In the even the login or password is lost, choice 3 enables the return to the default password:

```
--------------------------------------------------------------------------------
MGE UPS SYSTEMS
NETWORK MANAGEMENT CARD
--------------------------------------------------------------------------------
        1 : Reset
        2 : Network configuration
        3 : Set Login Password to Default
        4 : Return to Default Configuration
        0 : Exit
--------------------------------------------------------------------------------
Wait during Login Password return to default ...
```

Wait for the confirmation message.

```
Login Password are succefully been set.
```

The card is now accessible via the Web with the password MGEUPS.

The card must be **restarted** in order for the new parameters to be taken into account.

9.4 Choice 4: Return to Default Configuration

Enables restoration of the **default configuration** of all the card's parameters

```
---------------------------------------------------------------------------
MGE UPS SYSTEMS
NETWORK MANAGEMENT CARD
---------------------------------------------------------------------------
        1 : Reset
        2 : Network configuration
        3 : Set Login Password to Default
        4 : Return to Default Configuration
        0 : Exit
---------------------------------------------------------------------------
Wait during configuration returns to default ...
```

Wait for the confirmation message.

```
Configuration has been set to default one.
You must Reset the card.
```

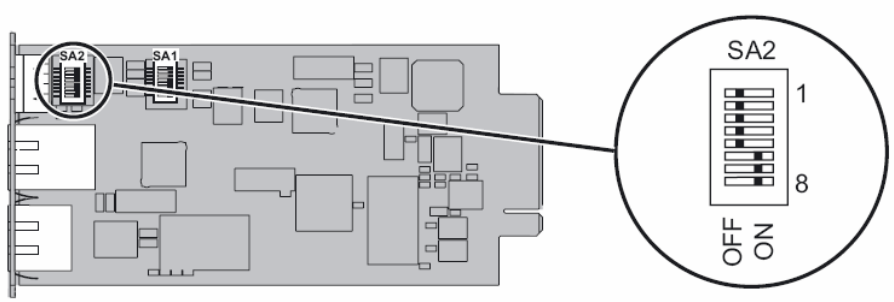
The card must be **restarted** in order for the new parameters to be taken into account.

10 Modbus/Jbus installation & use

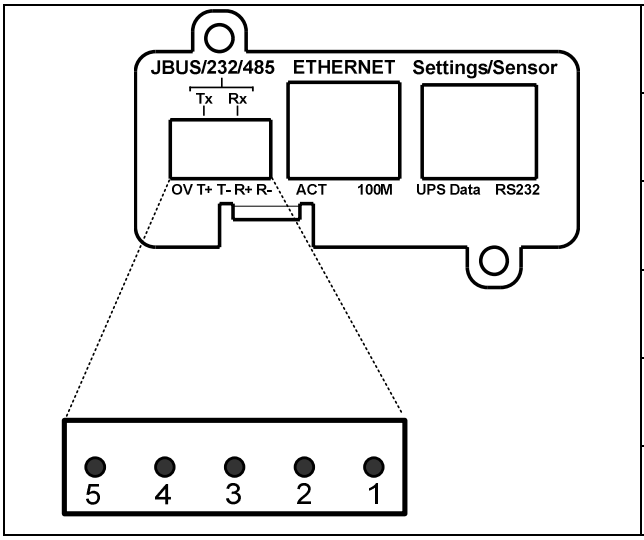
10.1 Installation

10.1.1 RS232 link configuration and connection

Set the SA2 switches like below:



The next figure shows the details of the connection in RS232 mode:



Pin number	Function
1	Received data (input)
2	Not connected
3	Transmitted data (output)
4	Not connected
5	Signal Ground

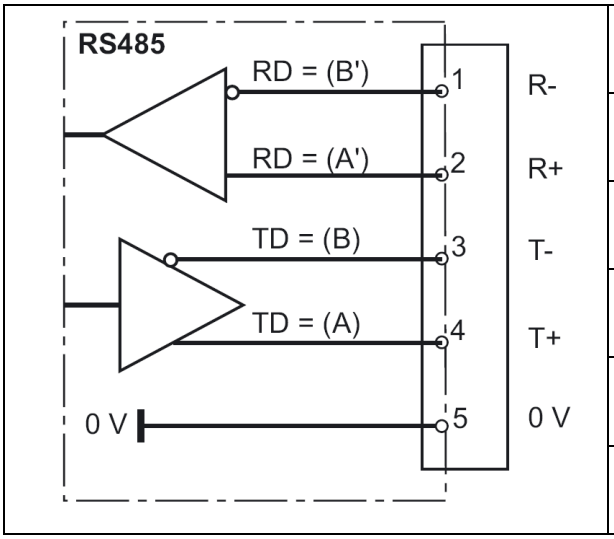
10.1.2 RS485 link configuration and connection

10.1.2.1 RS485 connection

Normally, the master of the network sets the polarity of the line. The INMC card is a slave equipment and don't have polarisation resistor.

The two ends of the line must be terminated. Allow for 1 or 2 terminators to avoid mismatching the line when any equipment at the end of the line is disconnected.

The next figure gives the detail of the RS485 connector and the internals drivers:



Pin number	Function
1	R- : Receiver - (input)
2	R+ : Receiver + (input)
3	T- : Transmitter - (output)
4	T+ : Transmitter + (output)
5	0 V

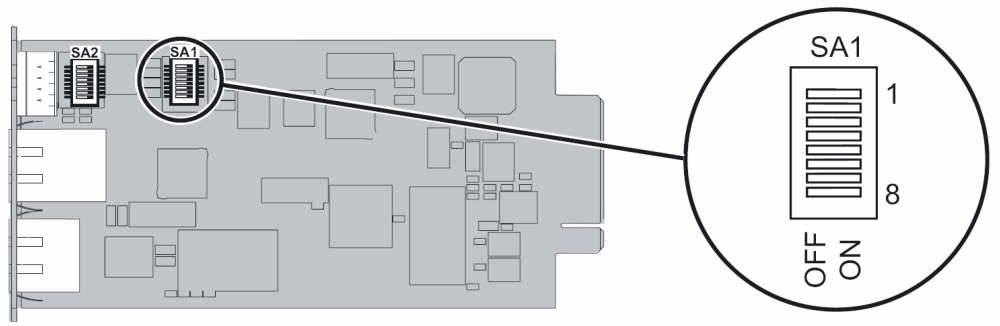
Important notes:

Use twisted pair cable (cable specification 0.3mm^2 and capacitance 42pF/m)

The transmission range will increase if a cable with lower capacitance and larger diameter is used.

Use shielded cable in heavy industrial environments.

The settings of the RS485 link are made through the SA1 switches:



SA1 description:

1: Polarization + to T-

2: Polarization - to T+

3: Link termination between T- to R- (2 wires configuration) if set to ON

4: Connection T- to R- (2 wires configuration) if set to ON

5: Connection T+ to R+ (2 wires configuration) if set to ON

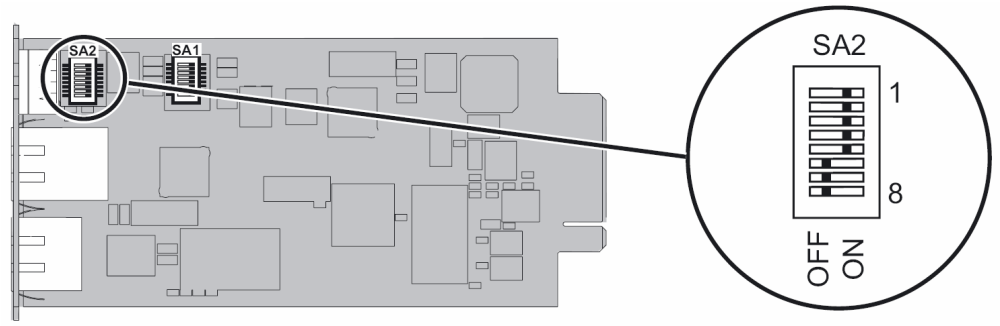
6: Polarization + to R-

7: Polarization - to R+

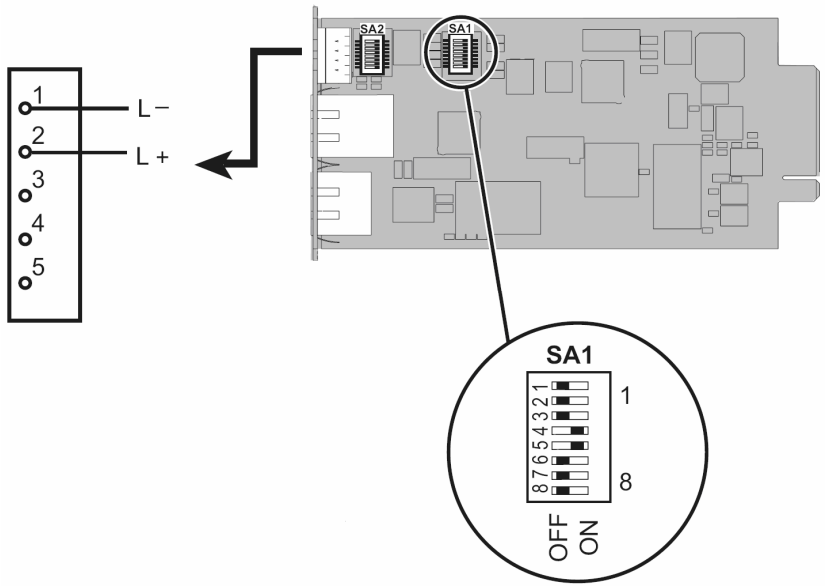
8: Link termination between R+ and R- if set to ON

10.1.2.2 RS485 link configuration for 2 wires connexion

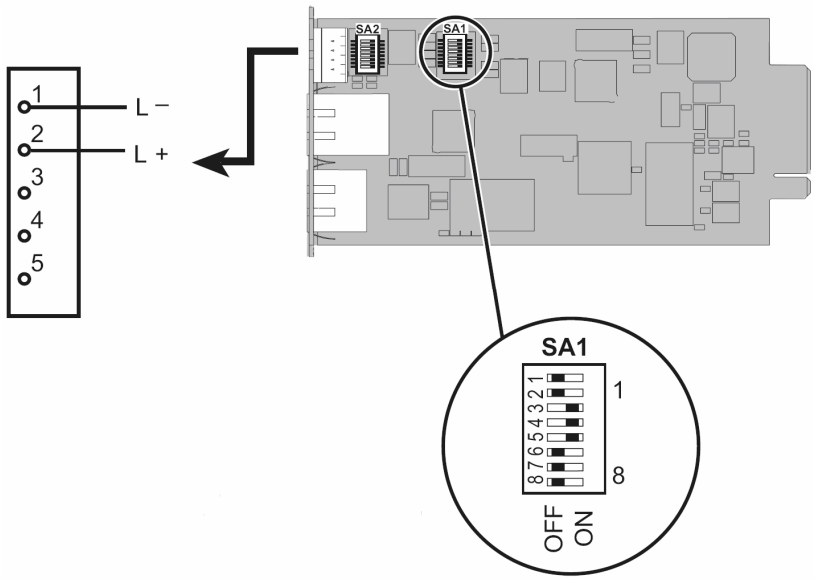
Set the SA2 switches like below to set the RS485 mode:



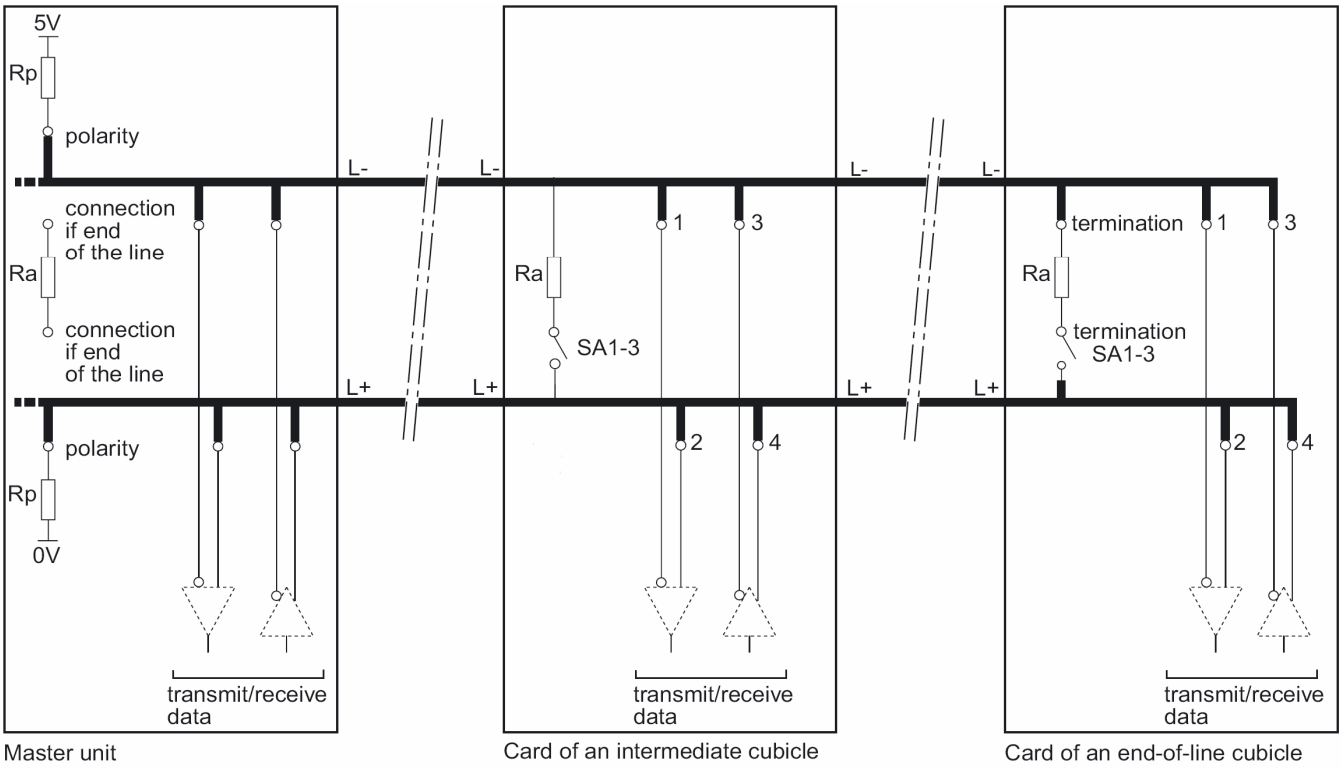
Set the SA1 switches to select the two wires configuration with no termination:



Set the SA1 switches to select the two wires configuration with termination:

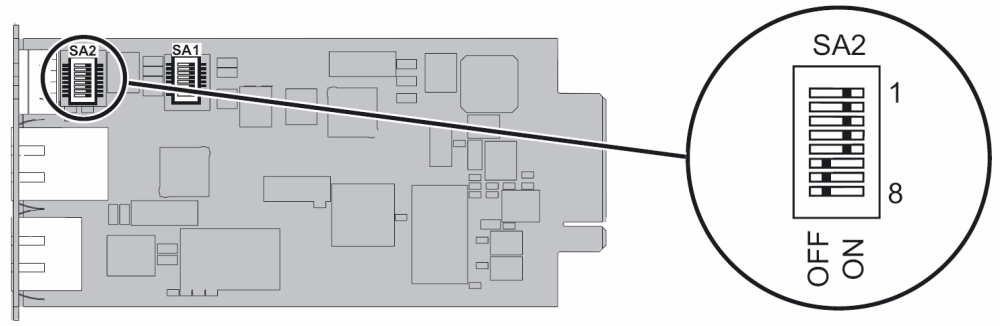


The next figure gives a typical bus structure in the two wires configuration:

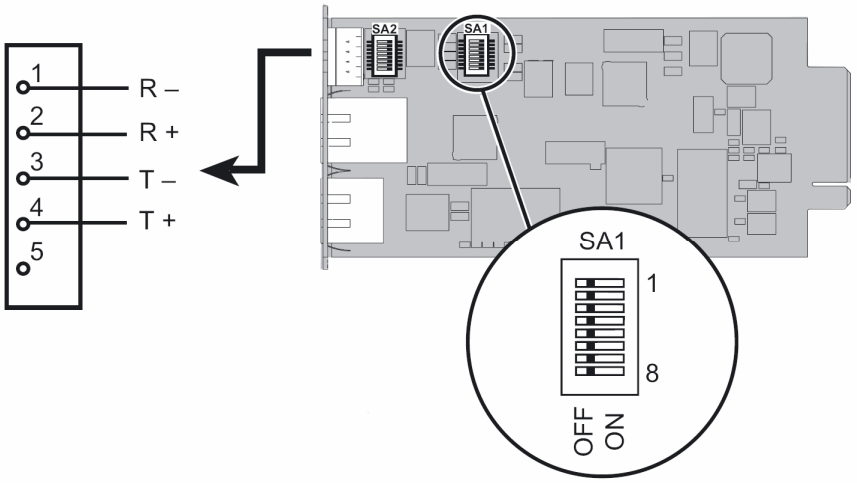


10.1.2.3 RS485 link configuration for 4 wires connexion

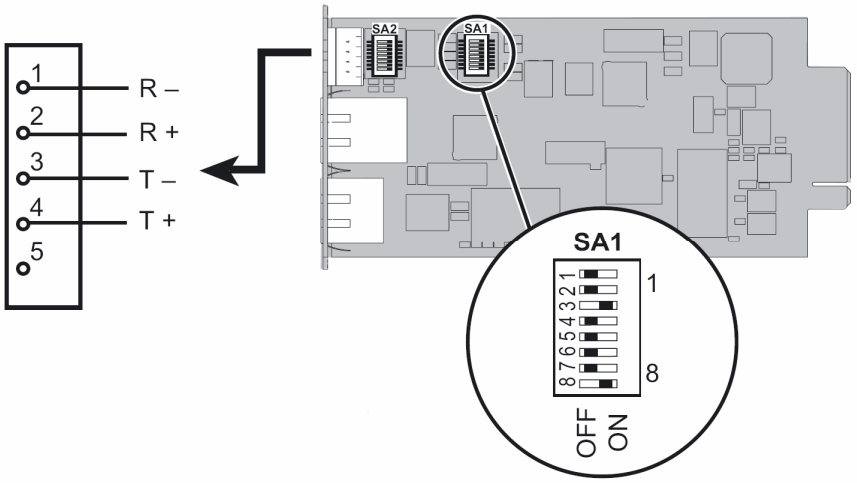
Set the SA2 switches like below:



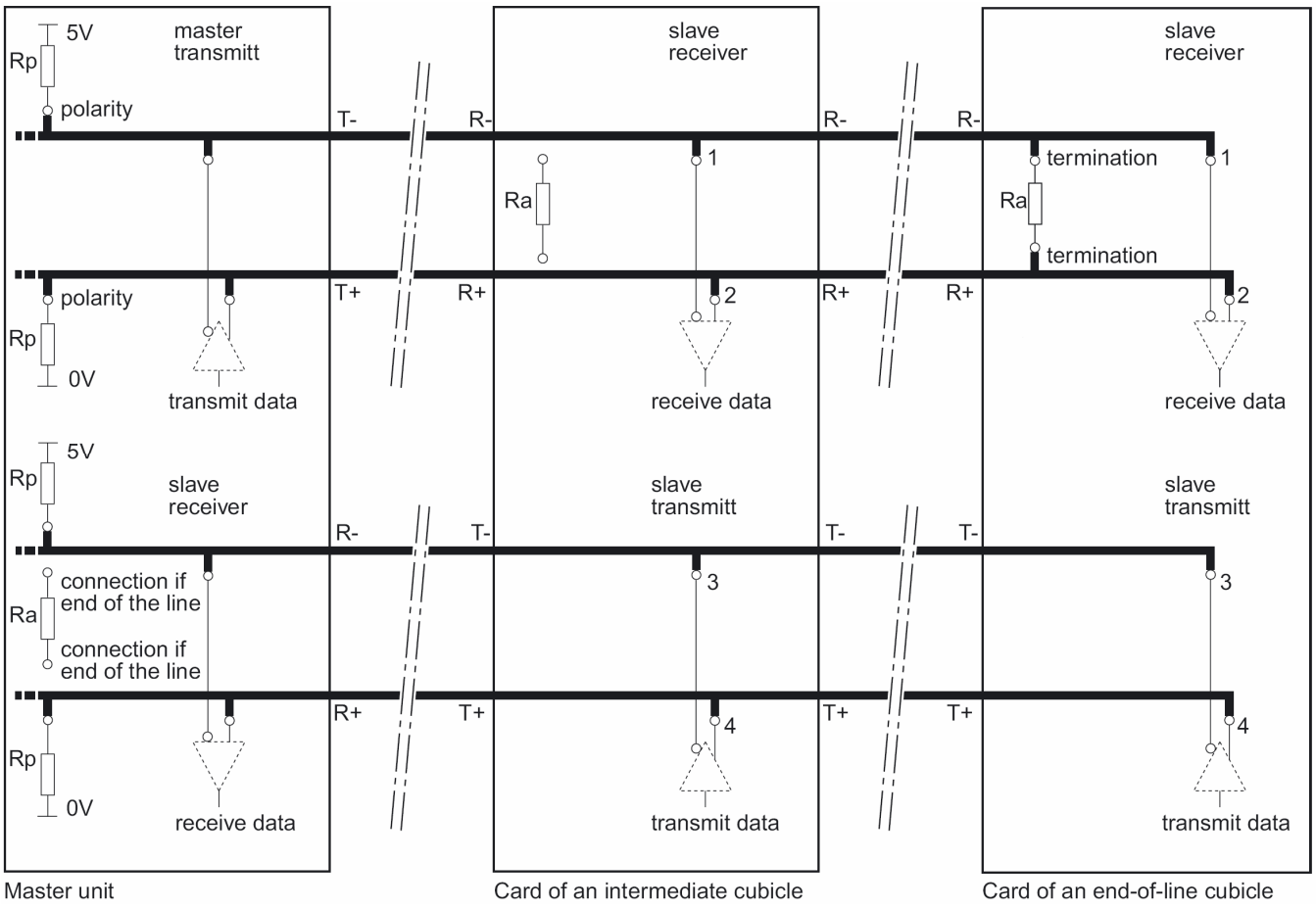
Set the SA1 switches to select the four wires configuration with no termination:



Set the SA1 switches to select the four wires configuration with termination:



The next figure gives a typical bus structure in the four wires configuration:



10.1.3 Configuration of the JBUS/MODBUS communication parameters

Connect the card to a computer equipped with a Hyper terminal type emulator. The serial link must be set at 9600 baud, 8 bits, no parity, 1 stop bit, and without flow control.
Check that UPS power is on.
Enter the MGEUPS or mgeups password (non modifiable).

The next menu appears:

```
--------------------------------------------------------------------------
MGE UPS SYSTEMS
NETWORK MANAGEMENT CARD
--------------------------------------------------------------------------
        1 : Reset
        2 : Network configuration
        3 : Set Login Password to Default
        4 : Return to Default Configuration
        5 : Jbus configuration
        6 : Sensor configuration
        0 : Exit
--------------------------------------------------------------------------
```

Type 5 and return to display the JBUS configuration menu.

The next menu appears:

```
--------------------------------------------------------------------------
Jbus settings
--------------------------------------------------------------------------
        1 : Display Jbus settings
        2 : Modify Jbus settings
        3 : Display Jbus diagnostics
        4 : Reset Jbus diagnostics
        5 : Return to Jbus Default Configuration
        6 : Display Jbus frames
        0 : Exit
--------------------------------------------------------------------------
```

10.1.3.1 Choice 1: Display Jbus settings

Enables reading of the card's Jbus settings

```
Jbus configuration :
    Slave number : 7
    Speed : 9600 bds
    Data : 8 bits
    stop bit : 1
    Parity : None
```

10.1.3.2 Choice 2: Modify Jbus settings

Enables the modification of Jbus settings.

```
Setting Jbus configuration :
    Set Slave number : 0x7
Set the Baud Rate [1: 38400, 2: 19200, 3: 9600, 4: 4800, 5: 2400, 6: 1200] :3

Set data format [1: 8 bits, 2: 7 bits] :1

Set stop bit [1: 1 bits, 2: 2 bits] :1

Set Parity [1: None, 2: Even, 3: Odd] :1

Wait during the new setting is saved ...
TLS/ Slave JBUS initialized
The Jbus configuration is now updated.
```

10.1.3.3 Choice 3: Display Jbus diagnostics

Enables reading of the Jbus diagnostics.

```
Jbus diagnostics :
    Cpt1 - Bus Message Count:0
    Cpt2 - CRC Error Count :0
    Cpt3 - Slave Exception Error Count:0
    Cpt4 - Slave Message Count:0
    Cpt5 - Slave No Response Count:0
    Cpt6 - Slave NAK Count:0
    Cpt7 - Slave Busy Count:0
    Cpt8 - Bus Caracter Overrun Count:0
    Cpt9 - Slave Correct Response Count:0
```

10.1.3.4 Choice 4: Reset Jbus diagnostics

Reset the Jbus diagnostic counters.

10.1.3.5 Choice 5: Return to Jbus Default Configuration

Returns to the Jbus default configuration (0x01, 9600, 8, 1, none)

```
Wait during Jbus configuration returns to default ...
Jbus Configuration has been set to default one.
```

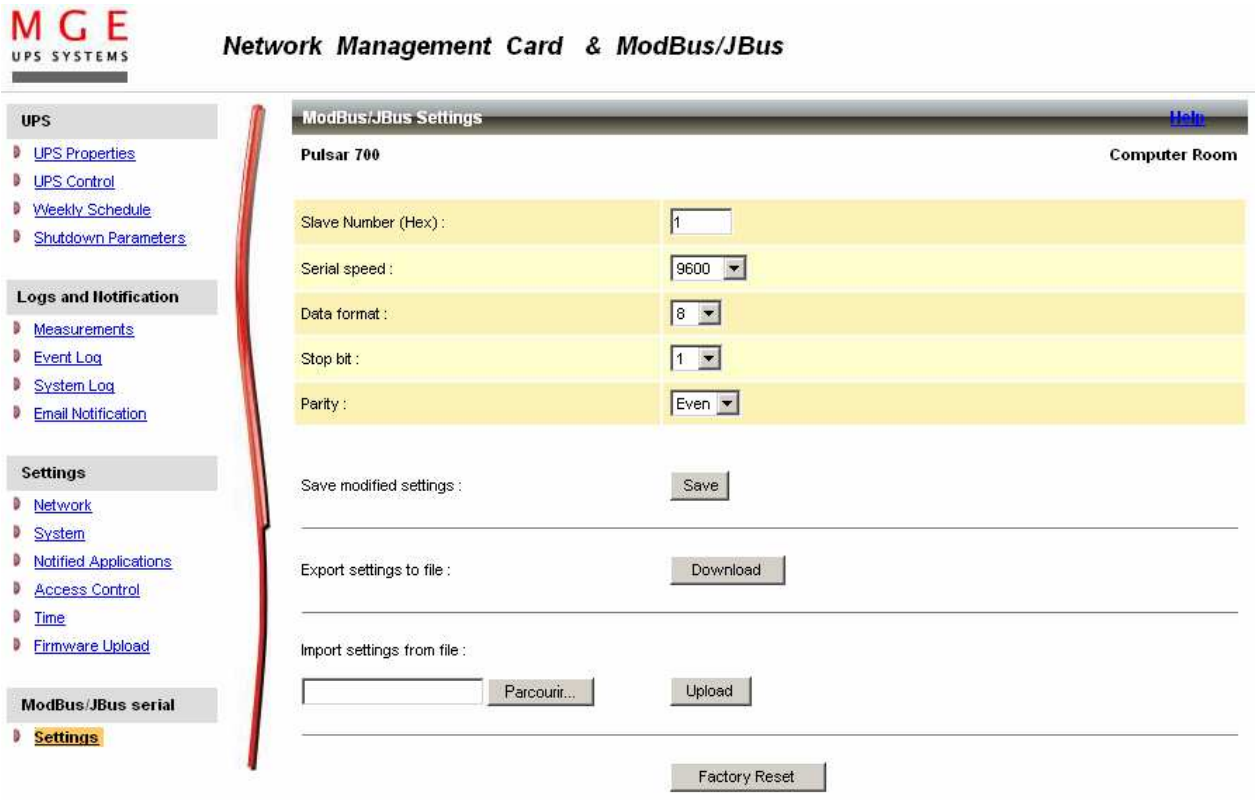
10.1.3.6 Choice 6: Display Jbus frames

Enables the display of the Jbus frames:

```
Recv : 01 01 00 00 00 64 3d e1
Send : 01 81 02 c1 91

Recv : 01 03 00 62 00 64 e5 ff
Send : 01 03 c8 00 00 00 00 00 00 00 00 00 00 00 00 00  ...

Recv : 01 01 00 00 00 64 3d e1
Send : 01 81 02 c1 91

Recv : 01 03 00 62 00 64 e5 ff
Send : 01 03 c8 00 00 00 00 00 00 00 00 00 00 00 00 00  ...
```

10.2 Additional Web pages

The INMC card Jbus parameters could be set through the next page:



10.3 Modbus register map

10.3.1 Status table

Status description	Status to 0	Status to 1	Word (hex)	Bit (0-15)
Load powered (protected or not)	No	yes	40	0
Load Protected (UPS coupled)	No	yes	40	1
Unit general alarm	No	yes	40	2
UPS in backup (Nota 5)	No	yes	40	4
Battery low warning (Nota 5)	No	yes	40	5
Low battery (Nota 5)	No	yes	40	6
Operation on static switch	No	yes	40	7
Communication fault	absent	present	40	9
UPS overload	No	yes	40	A
Emergency stop	absent	present	40	B
Battery to be checked or External battery monitoring fault (Nota 5)	No	yes	40	D
Device ventilation fault (Nota 6)	No	yes	40	E
Frequency converter	false	true	41	0
UPS type (Nota 4)	0, 5, 6 : undefine,		41	1
	1 : Unitary,		41	2
	2 : Modulare,		41	3
	3 : parallel:			
	4 : SSC			
Manual bypass switch (Q3BP)	Open	Closed	41	6
Battery deep discharge protection (Nota 5)	disable	Enable	41	8
Rectifier internal failure (Nota 5)	No	Yes	41	9
Protection Lost in parallel installation	No	Yes	41	A
Battery present (Nota 5)	absent	present	42	0
Battery test (Nota 5)	No fault	Fault present	42	2
Battery test in progress (Nota 5)	No	yes	42	8
Battery over temperature (Nota 5)	No fault	Fault present	42	A & D
Battery circuit breaker (QF1) (Nota 5)	Open	Closed	42	F
AC Normal switch (Q1)	Open	Closed	44	3
AC Normal voltage out of tolerance (Nota 5)	No	yes	44	8
AC Normal fuse fault (Nota 5)	No	yes	44	9
AC Normal frequency out of tolerance (Nota 5)	No	yes	44	B
Redundancy lost	No	yes	45	7
K2S present (Nota 7)	No	yes	45	8
K2S fault (Nota 7)	No	yes	45	9
K2S state (Nota 7)	No	yes	45	10

Status description	Status to 0	Status to 1	Word (hex)	Bit (0-15)
Overlaptransfert fault on SSC	No	yes	45	11
Maintenance position	No	yes	46	1
AC bypass overload (Nota 7)	No	yes	46	5
AC bypass thermal overload (Nota 7)	No	yes	46	6
AC bypass fault (Nota 7)	No	yes	46	7
AC bypass frequency out of tolerance (Nota 7)	No	yes	46	9
AC bypass voltage out of tolerance (Nota 7)	No	yes	46	A
Phase AC bypass out of tolerance (Nota 7)	No	yes	46	B
AC bypass sitch (Q4S)	Open	Closed	46	E
AC bypass internal fault (Nota 7)	absent	present	47	0
Forced desynchronization	absent	present	47	1
Bypass frequency independent (Nota 7)	absent	present	47	8
Output switch (Q5N)	Open	Closed	47	B
Charger general fault	No	Yes	49	0
Battery charge (Nota 5)	No	Yes	49	3 & 1 (bit1 for legacy product)
Chopper major fault (Nota 5)	No	Yes	4A	1
Inverter major fault (Nota 5)	No	Yes	4C	1
Inverter overload (Nota 5)	No	Yes	4C	2
Inverter thermal overload (Nota 5)	No	Yes	4C	3
Inverter limitation (Nota 5)	No	Yes	4C	4
UPS fuse fault (Nota 5)	absent	Present	4C	5
Load Short circuit	absent	Present	4F	1

Nota 1 : for Battery charge it is necessary to set 2 bits, for legacy JBUS table

Nota 3 : switch status equal 1, when closed

Nota 4 :

Galaxy	INMC/NMTC					
	@41 Hex	@41 Bin	@41 Bit3	@41 Bit2	@41 Bit1	@41 Bit 1, 2 and 3 in Dec
Unitary	2	0010	0	0	1	1
Modular	4	0100	0	1	0	2
Parallel	6	0110	0	1	1	3
SSC	8	1000	1	0	0	4

Nota 5 : This Information is not present with a Static Switch Cabinet unit.

Nota 6 : Device Ventilation Fault is present only in a Static Switch Cabinet 800kVA, this information is not present in a Static Switch Cabinet 1200kVA

Nota 7 : For a configuration with UPS in parallel with SCC unit, the Main 2 data need to read on the card installed in the SSC unit.

10.3.2 Measurement table

Description of the physical quantity	Word (hex)	Unit
I1 (I phase 1) mains 1 (Nota 1)	100	A
I2 (I phase 2) mains 1 (Nota 1)	101	A
I3 (I phase 3) mains 1 (Nota 1)	102	A
I1 (I phase 1) mains 2 (Nota 2)	106	A
I2 (I phase 2) mains 2 (Nota 2)	107	A
I3 (I phase 3) mains 2 (Nota 2)	108	A
I1 (I phase 1) output	109	A
I2 (I phase 2) output	10A	A
I3 (I phase 3) output	10B	A
I battery (Nota 1)	10E	A
U12 mains 1 (Nota 1)	115	V
U23 mains 1 (Nota 1)	116	V
U31 mains 1 (Nota1)	117	V
U mains 2 (phase 1) (Nota 2)	11E	V
U mains 2 (phase 2) (Nota 2)	11F	V
U mains 2 (phase 3) (Nota 2)	120	V
U12 mains 2 (Nota 2)	121	V
U23 mains 2 (Nota 2)	122	V
U31 mains 2 (Nota 2)	123	V
U1N output	124	V
U2N output	125	V
U3N output	126	V
U12 output	127	V
U23 output	128	V
U31 output	129	V
U battery (Nota 1)	12D	V
Output active power (phase 1)	130	kW
Output active power (phase 2)	131	kW
Output active power (phase 3)	132	kW
Output apparent power (phase 1)	133	kVA
Output apparent power (phase 2)	134	kVA
Output apparent power (phase 3)	135	kVA
Output total active power	136	kW
Output total apparent power	137	kVA
% output load level	139	%
Peak factor phase 1 x 100	13A	-
Peak factor phase 2 x 100	13B	-
Peak factor phase 3 x 100	13C	-
Power factor x 100	13D	-
AC normal frequency (Nota 1)	13E	dHz
AC bypass frequency	140	dHz

Description of the physical quantity	Word (hex)	Unit
Output frequency	141	dHz
Battery backup time (Nota 1)	149	Min
Battery temperature (Nota 1)	14A	℃
Battery charging level (Nota 1)	14B	%
U AC normal (phase 1) (Nota 1)	150	V
U AC normal (phase 2) (Nota 1)	151	V
U AC normal (phase 3) (Nota 1)	152	V
Number of battery block (Nota 1)	153	-
Total battery capacity (Nota 1)	154	Ah
Nominal Apparent Power	209	kVA
Nominal battery voltage (Nota 1)	213	V

Nota1 : This Information is not present in a Static Switch Cabinet.

Nota2 : For a configuration with UPS in parallel with SCC unit, the Main 2 data need to read on the card installed in the SSC unit.

10.3.3 Product information table

Information description	Word (hex)	Example
Manufacturer name	1A0	« Schneider Elec.»
Product name	1A8	« GALAXY 7000»
UPS model	1B0	«400 »
Serial number	1B8	« AN2E49008 »

10.3.4 Environnement Sensor Table

10.3.4.1 Sensor Status table

Status description	Status to 0	Status to 1	Word (hex)	Bit (0-15)
Communication fault	no	Yes	45	0
Alarm : temperature too high	no	Yes	45	1
Alarm : temperature too low	no	Yes	45	2
Alarm : humidity too high	no	Yes	45	3
Alarm : humidity too low	no	Yes	45	4
Input 1 alarm	no	Yes	45	5
Input 2 alarm	no	Yes	45	6
Input 1	open	Closed	48	0
Input 2	open	Closed	48	1

10.3.4.2 Sensor Measurements table

Description of the physical quantity	Word (hex)	Unit
Temperature measure	180	℃
Maximum temperature	181	℃
Minimum temperature (℃)	184	℃
Humidity measure (%)	187	%
Maximum humidity (%)	188	%
Minimum humidity (%)	18B	%

10.3.4.3 Sensor customisation table (RO)

Description	Word (hex)	Bit (0-15)
High threshold temperature (°C)	32C	0
Low threshold temperature (°C)	32D	0
Temperature hysteresis (°C)	32E	0
Offset temperature	32F	0
High threshold humidity (%)	330	0
Low threshold humidity (%)	331	0
Humidity hysteresis (%)	332	0
Humidity offset	333	0
Inputs call mask – input 1 close notification	334	0
Inputs call mask – input 2 close notification	334	2
Inputs call mask – low humidity notification	334	7
Inputs call mask – high humidity notification	334	6
Inputs call mask – input 1 open notification	334	1
Inputs call mask – input 2 open notification	334	3
Inputs call mask – low temperature notification	334	5
Inputs call mask – high temperature notification	334	4
Input 1 identification	336	0
Input 2 identification	33A	0

11 Appendices

11.1 Tables of alarms and events

11.1.1 Table of alarms and UPS events

List of time dated alarms

Alarm on	Alarm off
No Battery	Battery present
Battery temperature fault	Battery temperature OK
Battery charger fault	Battery charger OK
Battery fault	Battery OK
End of Warranty	LCM message OK
Contact MGE **http://www.mgeups.com/lcm**	
End of battery life	LCM message OK
Contacter MGE http://www.mgeups.com/lcm	
End of life of the wearing parts	LCM message OK
Contacter MGE http://www.mgeups.com/lcm	
Rectifier fault	Rectifier OK
Chopper fault	Chopper OK
Normal AC frequency out of tolerance	Normal AC frequency OK
Normal AC fuses blown	Normal AC fuses OK
Normal AC module fault	Normal AC module OK
Normal AC voltage out of tolerance	Normal AC voltage OK
Normal AC NOK	Normal AC OK
Site wiring fault	Site wiring OK
Bypass AC frequency out of tolerance	Bypass AC frequency OK
Bypass AC phase out of tolerance	Bypass AC phase OK
Bypass AC voltage out of tolerance	Bypass AC voltage OK
Automatic Bypass fault	Automatic Bypass OK
Automatic Bypass overload	Automatic Bypass load OK
Automatic Bypass overtemperature	Automatic Bypass temperature OK
Automatic Bypass thermal overload	Automatic Bypass load OK
Automatic Bypass switch (Q4S) open	Automatic Bypass switch (Q4S) closed
Normal AC switch (Q1) open	Normal AC switch (Q1) closed
Battery switch (QF1) open	Battery switch (QF1) closed
Manual Bypass switch (Q3BP) closed	Manual Bypass switch (Q3BP) open
UPS on manual bypass	
Output switch (Q5N) open	Output switch (Q5N) closed
Single wave load fault	Load OK
Inverter limitation	Inverter end of limitation
Inverter fuses blown	Input fuses OK

Inverter fault	Inverter OK
Inverter overload	Inverter load OK
Inverter thermal overload	Inverter load OK
Load not protected - On Automatic Bypass	Load protected - Return from Bypass
Load short circuit	Load OK
Load not powered	Load powered
Protection Lost	Protection OK
Emergency button ON	Emergency button OFF
Fan fault	Fan OK
Redundancy Lost	Redundancy OK
Low battery	Battery OK
UPS communication failed	UPS communication restored
UPS data base not available	UPS data base OK
UPS on battery	UPS on normal AC
UPS internal fault	UPS OK
UPS overload	UPS returns to normal load
UPS overtemperature	UPS temperature OK
Imminent UPS shutoff	UPS OK
< Sensor Name> : Temperature is above high threshold <xx> (℃) or (℉)	<Sensor Name> : Temperature is in normal range
< Sensor Name> : Humidity is above high threshold <xx> (%)	<Sensor Name> : Temperature is in normal range
< Sensor Name> : Temperature is below low threshold <xx> ℃ or (℉)	<Sensor Name> : Temperature is in normal range
< Sensor Name> : Humidity is below high threshold <xx> (%)	<Sensor Name> : Temperature is in normal range
<Sensor name>: <Input #1 label> <when closed label>	
<Sensor name>: <Input #1 label> <when open label>	
<Sensor name>: <Input #2 label> <when closed label>	
<Sensor name>: <Input #2 label> <when open label>>	

11.1.2 Table of system alarms

Network Management Card startup
Send test mail SUCCESS
Send test mail ERROR
Send mail to <recipient> ERROR
<Sensor name> Communication failure
<Sensor name> Communication restored
Firmware upgraded
Connected NSM list Full, last connection refused
sendTrap()-> Unable to resolve hostname <hostname>
SNMP Send Trap # <num> failure to <hostname>
Time changed by user with yyyy/mm/dd hh:mm:ss
Time synchronized by NSM or EPM with yyyy/mm/dd hh:mm:ss

11.2 SNMP objects

11.2.1 MGE MIB

The NMC card implement reduce MGEUPS MIB, with the objects bellow managed.

Access to the MGE MIB is 1.3.6.1.4.1.705.1.

MIB object	SNMP Format	Add.path
upsmgIdentFamilyName	String	{1,1,0}
upsmgIdentModelName	String	{1,2,0}
upsmgIdentFirmwareVersion	String	{1,4,0}
upsmgIdentSerialNumber	String	{1,7,0}
upsmgConfigLowBatteryTime (Nota2)	seconds	{4,7,0}
upsmgConfigLowBatteryLevel (Nota2)	%	{4,8,0}
upsmgConfigAutoRestart (Nota2)	1(yes) 2(no)	{4,9,0}
upsmgConfigVARating	VA	{4,12,0}
upsmgBatteryRemainingTime (Nota2)	seconds	{5,1,0}
upsmgBatteryLevel (Nota2)	%	{5,2,0}
upsmgBatteryVoltage (Nota2)	deciVolts	{5,5,0}
upsmgBatteryCurrent (Nota2)	deciAmps	{5,6,0}
upsmgBatteryTemperature (Nota2)	℃	{5,7,0}
upsmgBatteryFaultBattery (Nota2)	1(yes) 2(no)	{5,9,0}
upsmgBatteryReplacement (Nota2)	1(yes) 2(no)	{5,11,0}
upsmgBatteryLowBattery (Nota2)	1(yes) 2(no)	{5,14,0}
upsmgBatteryChargerFault (Nota2)	1(yes) 2(no)	{5,15,0}
upsmgBatteryLowCondition (Nota2)	1(yes) 2(no)	{5,16,0}
upsmgInputPhaseNum (Nota2)		{6,1,0}
mginputVoltage_1 (Nota2)	DeciVolts	{6,2,1,2,1,0}
mginputVoltage_2 (Nota2)	DeciVolts	{6,2,1,2,2,0}
mginputVoltage_3 (Nota2)	DeciVolts	{6,2,1,2,3,0}
mginputFrequency_1 (Nota2)	DeciHz	{6,2,1,3,1,0}
mginputFrequency_2 (Nota2)	DeciHz	{6,2,1,3,2,0}
mginputFrequency_3 (Nota2)	DeciHz	{6,2,1,3,3,0}
mginputCurrent_1 (Nota2)	DeciAmps	{6,2,1,6,1,0}
mginputCurrent_2 (Nota2)	DeciAmps	{6,2,1,6,2,0}
mginputCurrent_3 (Nota2)	DeciAmps	{6,2,1,6,3,0}
upsmgInputBadStatus (Nota2)	1(yes) 2(no)	{6,3,0}
upsmgInputLineFailCause	(Nota1)	{6,4,0}
upsmgOutputPhaseNum		{7,1,0}
mgoutputVoltage_1	deciVolts	{7,2,1,2,1,0}
mgoutputVoltage_2	deciVolts	{7,2,1,2,2,0}
mgoutputVoltage_3	deciVolts	{7,2,1,2,3,0}
mgoutputFrequency_1	deciHz	{7,2,1,3,1,0}

mgoutputFrequency_2	deciHz	{7,2,1,3,2,0}
mgoutputFrequency_3	deciHz	{7,2,1,3,3,0}
mgoutputLoadPerPhase_1	%	{7,2,1,4,1,0}
mgoutputLoadPerPhase_2	%	{7,2,1,4,2,0}
mgoutputLoadPerPhase_3	%	{7,2,1,4,3,0}
mgoutputCurrent_1	deciAmps	{7,2,1,5,1,0}
mgoutputCurrent_2	deciAmps	{7,2,1,5,2,0}
mgoutputCurrent_3	deciAmps	{7,2,1,5,3,0}
upsmgOutputOnBattery (Nota2)	1(yes) 2(no)	{7,3,0}
upsmgOutputOnByPass	1(yes) 2(no)	{7,4,0}
upsmgOutputUtilityOff	1(yes) 2(no)	{7,7,0}
upsmgOutputInverterOff	1(yes) 2(no)	{7,9,0}
upsmgOutputOverLoad	1(yes) 2(no)	{7,10,0}
upsmgOutputOverTemp (Nota2)	1(yes) 2(no)	{7,11,0}
upsmgAgentIpAddress		{12,1,0}
upsmgAgentSubnetMask		{12,2,0}
upsmgAgentDefGateway		{12,3,0}
upsmgAgentType		{12,6,0}
upsmgAgentMibVersion		{12,11,0}
upsmgAgentFirmwareVersion		{12,12,0}
upsmgAgentCommUPS	1(yes) 2(no)	{12,13,0}

Nota1 :

Line Fail Cause

1	No Fail
2	Only AC Normal Voltage Ouf of Tolerance
3	Only AC Normal Frequency Ouf of Tolerance
4	AC Normal Fail

Nota2: This Information is not significative in a Static Switch Cabinet unit.

If the Environment Sensor is detected , the following information are managed.

upsmgEnvironAmbientTemp	0.1 degré	{8,1,0}
upsmgEnvironAmbientHumidity	0.1 %	{8,2,0}
upsmgEnvironmentNum		{8,6,0}
upsmgEnvironmentIndex		{8,7,1,1,1 }
upsmgEnvironmentComFailure	1(yes) 2(no)	{8,7,1,2,1}
upsmgEnvironmentTemperature	0.1 degré	{8,7,1,3,1}
upsmgEnvironmentTemperatureLow	1(yes) 2(no)	{8,7,1,4,1}
upsmgEnvironmentTemperatureHigh	1(yes) 2(no)	{8,7,1,5,1}
upsmgEnvironmentHumidity	0.1 %	{8,7,1,6,1}
upsmgEnvironmentHumidityLow	1(yes) 2(no)	{8,7,1,7,1}
upsmgEnvironmentHumidityHigh	1(yes) 2(no)	{8,7,1,8,1}
upsmgEnvironmentInput1State	closed(1), open(2)	{8,7,1,9,1}
upsmgEnvironmentInput2State	closed(1), open(2)	{8,7,1,10,1}

11.2.2 Table des TRAPS : (1.3.6.1.4.1.705.1.11)

SNMP traps are sent when alarms appears and desappears.

Level : 1:informational , 2:major, 3:critical

MIB TRAP	Trap #	niveau
-upsmgBatteryFault (Nota1)	Trap 1	Level 3
-upsmgBatteryOK (Nota1)	Trap 2	Level 1
-upsmgAtLowBattery (Nota1)	Trap 5	Level 3
-upsmgFromLowBattery (Nota1)	Trap 6	Level 1
-upsmgChargerFault (Nota1)	Trap 7	Level 3
-upsmgChargerOK (Nota1)	Trap 8	Level 1
-upsmgOnBattery (Nota1)	Trap 11	Level 2
-upsmgReturnFromBattery (Nota1)	Trap 12	Level 1
-upsmgOnByPass	Trap 13	Level 2
-upsmgReturnFromByPass	Trap 14	Level 1
-upsmgUtilityFailure	Trap 17	Level 2
-upsmgUtilityRestored	Trap 18	Level 1
-upsmgOverLoad	Trap 21	Level 3
-upsmgLoadOK	Trap 22	Level 1
-upsmgOverTemperature (Nota1)	Trap 23	Level 3
-upsmgTemperatureOK (Nota1)	Trap 24	Level 1
-upsmgOffInProgress (Nota1)	Trap 31	Level 3
-upsmgCommunicationFailure	Trap 37	Level 3
-upsmgCommunicationRestored	Trap 38	Level 1
-upsmgRedundancyLost	Trap 65	Level 2
-upsmgRedundancyOK	Trap 66	Level 2
-upsmgProtectionLost	Trap 67	Level 2
-upsmgProtectionOK	Trap 68	Level 2

Nota1: This Information is not present with a Static Switch Cabinet unit.

If the Environment Sensor is detected , the following information are managed.:

- upsEnvironmentComFailure	Trap 53	Level 2
- upsEnvironmentComOK	Trap 54	Level 2
- upsEnvironmentTemperatureLow	Trap 55	Level 2
- upsEnvironmentTemperatureHigh	Trap 56	Level 2
- upsEnvironmentTemperatureOK	Trap 57	Level 2
- upsEnvironmentHumidityLow	Trap 58	Level 2
- upsEnvironmentHumidityHigh	Trap 59	Level 2
- upsEnvironmentHumidityOK	Trap 60	Level 2
- upsEnvironmentInput1Closed	Trap 61	Level 2
- upsEnvironmentInput1Open	Trap 62	Level 2
- upsEnvironmentInput2Open	Trap 64	Level 2

- upsEnvironmentInput2Closed	Trap 63	Level 2

The level is used to select traps to be sent to the supervisor. This adjustment is available from the “Notified applications” page

12 Glossary

Bootp:
Protocol based on UDP used to allocate an IP address corresponding to an Ethernet card during the startup phase. Defined by the RCF 951

Community name:
Access key to access SNMP agent information

DHCP Dynamic Host Configuration Protocol
This IETF protocol enables remote, automatic, self-configuration of the IP addresses of a workstation.

DNS Domain Name Sevicel
The DNS protocol ensure correspondence between the name of a machine and its IP address

E-mail
Electronic means of transmitting messages and/or files.

Gateway
Interconnection equipment between networks with different conventions, to enable communication between them

HTML
(HyperText Markup Language) Language used to describe hypertext pages on the web.

HTTPS : is the secure version of HTTP, the communication protocol of the World Wide Web. It was invented by Netscape Communications Corporation to provide authentication and encrypted communication and is used in electronic commerce.

IP
Internet Protocol. Network layer protocol in the TCP/IP stack offering a no-connection inter-network service . The IP protocol offers functions for addressing, service type specification, fragmentation and re-assembling and security. Defined in RFC 791.

ISXC
Infra StruXure Central

MIB MANAGEMENT INFORMATION BASE
- Group of software commands to control and administrate a device through the network. Each type of device (server, hub, PC, UPS, etc.) has its own MIB

NETWORK MANAGEMENT CARD
Communication cards to supervise UPS and communicate with Network Shutdown Module to insure power protection on servers

NETWORK MANAGEMENT PROXY
Communication software installed on a PC connected to the UPS to supervise it and communicate with Network Shutdown Module to insure power protection on servers

NMS NETWORK MANAGEMENT STATION (SNMP)
The dedicated PC or workstation is used on the company's networks to administrate all devices connected to the network. Data are transmitted using the SNMP protocol. Popular NMS systems include HP OpenView, IBM Tivoli, CA Unicenter, etc.

NSM : NETWORK SHUTDOWN MODULE
Protection software installed on a PC or server to protect it

NTP Network Time Protocol
Protocol to position a set of machines on a network at the same time.

Programmable outlet (controlled outlet):
Outlet that can be remote-switched on or off. UM-Client components enable management of such outlets.

REBOOT –
To restart a system after an interruption.
– To perform an obstacle-free "reboot", it is essential that the system is correctly and carefully shut down beforehand.
– The reboot is usually automatic if the computer is re-supplied with electricity (from the utility or from the UPS).

RFC
Request for Comments. All documents defining internal Internet operation.

SNMP (SIMPLE NETWORK MANAGEMENT PROTOCOL)
Protocol used to remote-supervise, administrate and control devices connected to a company network.

SMTP (SIMPLE MAIL TRANSFER PROTOCOL)
Enables message transfer between e-mail servers or between the client and its server. It is based on the server's port 25. It is described in RFC 821

SSL (Secure Sockets Layers) is a protocol developed by Netscape Communications Corporation for securing data transmission in commercial transactions on the Internet. Using public-key cryptography, SSL provides server authentication, data encryption, and data integrity for client/server communications

Subnet mask:
Mask of bits used to identify and differentiate the network address and the equipment address in an IP address.
Normally, the mask is automatically determined by the class of address, which defines in a unique manner the network part/equipment part division of the IP address.
- Class A: internet address: 255.0.0.0.
- Class B: internet address: 255.255.0.0.
- Class C: internet address: 255.255.255.0.

TCP/IP

Transmission Control Protocol/Internet Protocol. Common name of a series of protocols developed by the DOD in the US to help build Internet networks throughout the world.

Telnet

Internet protocol used for terminal emulation, i.e. enabling a computer to connect with a server as if it was a simple terminal locally connected to this server.

Trap (SNMP) : This term describes an event that affects an MIB variable. Traps are sent to the manager, which is programmed to perform specific tasks upon reception of the traps.